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# EIGHTH . . . . . ANNUAL REPORT

OF THE

# STATE BOARD OF HEALTH

. OF

### THE STATE OF OHIO

FOR THE

YEAR ENDING OCTOBER 31, 1893.

NORWALK OHIO THE LANING PIG CO , STATE PRINTERS 1891.



Ohio State Board of Health,
Office of the Secretary,
Columbus, Ohio, December 22, 1893.

To His Excellency, WILLIAM MCKINLEY, JR., Governor of Ohio:

SIR: In accordance with section 8 of an "Act to create and establish a State Board of Health," the accompanying report is herewith submitted for the year ending October 31, 1893.

Respectfully,

C. O. PROBST, M. D., Secretary.

## MEMBERS OF THE BOARD OF HEALTH.

	December, 1894	
E. T. NELSON, M. A., Ph. D., Delaware		
BYRON STANTON, M. D., Cincinnati	**	1895
		1896
S. P. Wise, M. D., Millersburg		1897
WILLIAM T. MILLER, M. D., Cleveland		
THOMAS C. HOOVER, M. D., Columbus		1898
R. D. Kahle, M. D., Lima		1899
Iosiah Hartzell, Canton		1900
1051AR TIARTELLA, Cuntonia		

## General Report.

The eighth annual report of the State Board of Health, which is for the year ended October 31, 1893, is herewith presented.

#### PERSONNEL OF THE BOARD.

Some changes have occurred in the membership of the Board since the last report was presented. The term of office of Dr. H. J. Sharp, of London, having expired December 13, 1892, Dr. R. D. Kahle, of Lima, was appointed to fill the vacancy so created, and for the term of seven years, ending December 13, 1899.

At the April meeting of the Board it was discovered that through inadvertence of the Senate of the sixty-ninth General Assembly, the appointments of Dr. Thomas C. Hoover, of Columbus, and Dr. S. A. Conklin, of Canton, had not been confirmed. On this fact being made known, Dr. Hoover tendered his resignation, and was reappointed by the Governor, subject to confirmation by the Senate, for the term ending December 13, 1898. The question of the membership of Dr. Conklin was submitted to the Attorney-General, who gave an opinion to the effect that the Senate having adjourned with no official record of its having confirmed the appointment of Dr. Conklin, such appointment was thereby rejected, and Dr. Conklin was not a member of the Board. This vacancy has not been filled, and the year closes with the membership of the Board as follows:\*

E. T. NELSON, A. M., Ph. D., President	Delaware.
B. STANTON, M. D	Cincinnati.
S. P. WISE, M. D	Millersburg.
WM. T. MILLER, M. D	Cleveland.
THOS. C. HOOVER, M. D	Columbus.
R. D. KAHLE, M. D	Lima.

<sup>\*</sup>Mr. Josiah Hartzell, of Canton, has since been appointed for the term ending December 13, 1900.

#### HEALTH OF THE STATE.

From monthly reports of deaths in cities and villages, and weekly reports of zymotic diseases, we are able, happily, to state that the year has been attended with unusually good health. Diphtheria has prevailed endemically in several towns—notably in Sidney, Piqua and Marion, and Akron suffered from an epidemic of small-pox; but the general death rate, judging from the monthly mortality reports of cities and villages has been low.

#### SMALL-POX.

An outbreak of small-pox occurred in Akron the latter part of December, 1892, which resulted in seventy-seven cases and eighteen deaths from the disease in this state. So far as known, only one case of the disease was carried to another state. A newly married couple from Michigan arrived in Akron on the day small-pox was discovered, and went to the house of a relative, where a case, unknown to the authorities at that time, existed. The couple returned to Michigan the following day, and the woman subsequently developed small-pox.

Of the cases occurring in Ohio, fifty-three cases and sixteen deaths occurred in Akron, three cases and one death in Wadsworth, Medina county, and thirteen cases with no deaths in Richland county near Mansfield, and one case in Canton removed to Akron.

The Board, through its secretary, instituted a personal supervision-in all these cases, and cooperated with the local authorities in stamping out the disease.

The origin of these cases is well worthy of note: William Gornold, of Schiefelbein, Germany, sailed from Hamburg on the steamship Saale, arriving at New York quarantine November 23, 1892. The report of the health officer for the port of New York for the year 1892 records the arrival of the steamship Saale with two cases of small-pox aboard.

The immigrants on the Saale were vaccinated by the ship's surgeon during the voyage, but unsuccessfully with respect to those who came to Ohio. William Gornold, who went to friends in Akron, was taken sick December 2d, but the physician who was called did not recognize the nature of his complaint, as the disease was modified by vaccination performed in his own country. After a week's illness he went to work on December 12th, in the moulding department of the Taplin, Rice & Co. machine works. This was the starting point of the disease, though there was no knowledge of this initial case until some time in February.

In spite of the most strenuous efforts on the part of the Akron Board of Health, the disease prevailed there until March 30, 1893, the date of the last case.

A complete and detailed history of this epidemic, prepared by Mr. A. H. Sargent, secretary of the Akron Board of Health, is published on a subsequent page.

Small-pox was reported at Norwood, December 30, 1892. On inquiry it was learned that a party of twenty-one immigrants from Germany had arrived at Norwood, November 25th, having debarked from the steamship Saale at New York, on the 23d, being detained at New York quarantine one day.

December 4th, Henry Ruscher, one of these immigrants, was taken sick with chills and fever, followed by an eruption. No physician was called. On December 20th, his wife was taken ill and developed confluent small-pox. On December 22d, Mrs. Saarbruck, an immigrant and sister of Mrs. Ruscher, took sick with what proved to be confluent small-pox, and died December 31st.

January 12th a case of small-pox was reported in Cincinnati, the patient being an undertaker who, unknown to the authorities, embalmed the body of Mrs. Saarbruck—He was promptly removed to the infectious disease hospital, and no other cases resulted.

These two outbreaks of small-pox at Akron and Norwood occurred at about the same time—both being due to contagion received on board the Saale, the exposure having evidently been shortly before landing.

#### CHOLERA.

During the winter of 1892–3, cholera continued to be reported in various parts of Europe, and it was apparent that the coming summer would be one of anxiety if not of danger to our state. The lack of sufficient quarantine equipment at many of our important ports of entry was just cause for much uneasiness, and sanitary officials of most of the states were practically united in urging upon Congress the establishment of a national system of quarantine under the direction of a national department of health. At the January meeting of the board a resolution was adopted favoring such action, and a committee appointed to draw up a memorial to Congress urging the adoption of some such measure, and the suspension of immigration until the quarantine defenses of the nation could be placed in proper condition.

Such a memorial was prepared and sent to each municipal board of health in Ohio, urging its adoption by such boards, and that proper resolutions embodying such action be sent to Ohio's representatives in Congress. Memorials of this character were sent to Congress from throughout the state, and were duly presented by our representatives. For reasons not necessary to state, Congress deemed it advisable simply to extend the quarantine powers of the Marine Hospital Service, allowing the continuance of local quarantine stations under the general supervision of that department.

Officers of the Marine Hospital Service have been stationed at all the important European ports, with instructions to examine all immigrants and their baggage destined for this country, to issue certificates as to their freedom from danger of conveying cholera or other contagious diseases, and to enforce disinfection of snips, baggage and clothing, when deemed necessary.

It has been demonstrated time and again, that not only are the exotic diseases, cholera, yellow fever and small-pox, usually introduced into this country by means of immigrants and their effects, but that the more prevalent, and consequently more dangerous diseases, diphtheria, scarlet fever, measles and whooping cough are so introduced; and it is the opinion of this Board that at all times immigrants and their biggage should be inspected and disinfected before being embarked for this country.

The inspection service abroad, which has been continued to the present time, October 31, 1893, while it did not remove our danger from cholera, greatly lessened it, and there has been no occasion for special action of this Board with reference to the disease. Local health authorities were again urged to greater efforts to remove unsanitary conditions, and several investigations of municipal water supplies reported to be subject to grave pollution, were prosecuted by the Board. Regulations to guard the state against the introduction of contagious diseases by transportation companies, were adopted by the Board, and copies of the same furnished to all such companies operating in Ohio.

On January 29 and 30, 1893, a joint meeting of the State and Local Boards of Health was held in Columbus, at which the subject of cholera and its prevention was exclusively discussed. The meeting was largely attended, and was productive of good results.

In April a representative of the Board attended a meeting of State Boards of Health and port quarantine authorities of the United States and Canada, held in New York City, where quarantine and plans for interstate co-operation in case cholera should gain entrance to the country were considered.

#### LOCAL BOARDS OF HEALTH.

By virtue of an act of March 14, 1893, the council of each municipality is required to appoint a board of health, and the trustees of each township to perform all the duties of such boards. Provision is thus made for fifty-three city boards of health, six hundred and fifty two village, and thirteen hundred and fifty-three township boards of health—two thousand and fifty-eight in all.

Every effort has been made by correspondence and otherwise to secure the establishment and proper organization of such boards. Instructions as to the powers and duties, including rules and regulations recom-

mended for their adoption, and samples of blanks required for systematic work, were prepared and furnished to each board. A most gratifying success has attended our efforts in this direction. There is now an established board of health in every city: 451 village boards and 947 township boards. It is especially noteworthy to observe the readiness with which the townships responded to this requirement, showing the recognition by residents of our rural districts of the necessity for the enforcement of proper sanitary regulations.

All real progress in practical sanitation must come through the efforts of local boards of health, and the State Board can best fulfill its function by so directing their labors that the greatest returns may be secured. The work nearest at hand seems to be the prevention of contagious diseases. Our knowledge of the causation of some of these diseases enables us to positively know that each case to occur must be due to exposure—direct or indirect—to a preceding case of the same disease. Admitting this, it is theoretically possible, barring importation, by preventing such exposure to absolutely stamp out such diseases. Striving towards this ideal, the State Board of Health, by authority of the last General Assembly, has assumed the exercise of executive powers as regards the prevention of contagious diseases, and has adopted and promulgated certain rules and regulations looking towards this end. But here the main dependence will be placed in the local health authorities, whose duty it is to enforce such rules. This work we feel sure, will be supported by all the people, and will be prosecuted to the extent of our powers.

Attention is directed to the annual reports of our local boards of health for an index of what is being done to improve the sanitary condition of various localities, and also as showing what the sanitary defects and needs of our towns and cities are at the present time. To one who follows these reports from year to year it will be of interest to note the increasing effectiveness of our local health boards. It has been the policy of the Board in framing the questions upon which reports from local boards are based, to suggest certain lines of work which we were well aware were not being pursued by most local authorities, with the hope of having such work better done in future years. This plan has met with marked success. Boards which at first reported the neglect of a suggested duty have, on subsequent inquiry been found performing it. The reports as published are necessarily very brief, but sufficiently full to impart most useful information concerning the work of various boards. There is, taking them as a whole, every reason to be gratified by the good work of our local boards of health.

#### PUBLIC INTEREST IN SANITATION.

It is encouraging to note, along with this increasing efficiency of the health service, a growing public interest in sanitary matters throughout the state. The Board from its creation has endeavored to instruct and interest the people in measures which are calculated to prevent sickness and death, and its efforts in this direction have met with more than hoped for success. This has been demonstrated in a number of ways: By the general recognition that communicable diseases may be prevented by isolation and disinfection and by demanding of health authorities the enforcement of such measures; by the common knowledge that wells in populous neighborhoods are subject to dangerous pollution causing disease, and the demand of public supplies of pure water; by the gradual replacement of leaking privies and cess-pools by public sewers, or by water tight vaults or dry earth closets; by increased attention to municipal and domestic cleanliness, streets and alleys being kept in cleaner condition, and household refuse being regularly removed to proper dumping grounds; by sanitary improvements in dwellings, school houses and public buildings, especially in regard to their ventilation. It is especially noteworthy that sanitary topics are constantly and intelligently discussed by all classes of citizens, and that the press and journals devote considerable space to such matters. The people have undoubtedly become greatly interested in sanitation and are ready for increasingly severe measures by boards of health to protect the public health.

Along with, or rather in advance of this popular movement for better sanitation, there have been remarkable advances in sanitary science. Theories in regard to many diseases have been replaced by facts, leading to more certain methods for their prevention or control. The relation of environment to disease, including overcrowding, filthy surroundings, occupation, bad and insufficient food, impure water, and various other factors of urban existence, is being worked out, and the remedies suggested, if not applied. Experiments in preventive inoculation or vaccination against diphtheria, cholera, yellow fever, consumption and other communicable diseases, are being prosecuted by skilled hands in every land, and the future promises boons to humanity of incalculable price.

#### PUBLIC WATER SUPPLIES.

It is high time that the state should take some action for the protection of public water supplies. If our people were but willing to take advantage of the experience gained by the older cities of foreign countries, not only would millions of dollars be saved to the state but much unnecessary sickness and death might be prevented.

The difficulty in solving this question of securing potable water for public supplies increases year by year. The census of 1890 shows a remarkable movement of population from rural to urban districts.

Whereas in 1880 less than twenty-two per cent, of the whole population of Ohio was living in cities of over 10,000 inhabitants, in 1890 more than thirty per cent. of the population was reported in such cities. And while the per centage of increase in population for the whole state, during this decade, was 14.83, the increase in cities of more than 10,000 was more than fifty-six per cent. It may be expected that this urban movement will continue, and no one would venture to predict to what size our cities will have grown within the next four or five decades. Along with this increase in urban population there has come a decrease in both the actual number of available sources of water supply and their capacity. Streams which some years ago were of large size throughout the year, are now, from deforestation and other causes, completely dry for months each summer. There is also a growing movement in favor of sewerage systems as a means of getting rid of foul wastes, and in Ohio, with but a single exception, the sewage is turned into some water course or lake without attempt at purification. If this wholesale pollution of the waters of the state is permitted to continue, within the next quarter of a century there will not be a stream in Ohio available for public water supplies, without artificial purification.

It is highly desirable that a complete survey of the water supplies of the state should be made in order that some sound basis for action may be obtained. It may be found wise or necessary to set apart certain of our streams for sewerage purposes, allowing their pollution within limits short of creating a nuisance, and prohibiting the use of such streams for water supplies; others can possibly be saved for the latter purpose, and be zealously guarded against contamination.

Careful surveys and estimates should be made of the deep underground water supplies. Many of our cities have already supplied themselves with deep water by artesian wells, and this source would undoubtedly be available for others. The numerous wells bored in various sections of the state for oil and gas have been so many experiments in sounding for deep water supplies; and it may possibly be cound that in many places where no gas or oil was obtained a more precious product, pure water, was found.

It would have been of great value to the state if at the time of boring these deep wells, accurate records had been made and kept of the quantity and quality of underground water met with; but it is still not too late to obtain valuable information of this kind by proper surveys. By inaugurating now a broad policy of protection, future cities of Ohio, into which many of our villages will grow, may find near at hand, adequate supplies of potable water, thereby avoiding the needless expenditure of considerable sums.

We therefore urgently recommend that provisions be made by the General Assembly for a survey of the water supplies of the state to be followed by such legislation as may appear wise for their protection.

#### VITAL STATISTICS.

Attention is again called to the registration of vital statistics in Ohio. It has been pointed out in former reports that the present system is practically worthless for all purposes. It does not in the least deter crime by making concealment more difficult; is to a great extent useless for identification purposes, as in the settlement of estates, etc., and offers no basis for legitimate comparisons of the death rates from various causes of populations of different sections, or of different occupations, ages, nationalities, etc.

Our increase in population is measured in decades by the national government, but the state's attempt to register the annual losses fails utterly to show the extent or cause of such losses. Our living popula ion should be considered as capital belonging to the state (it is in fact the most valuable capital of the state), of which an accurate account should be kept; births on the credit side; deaths on the debit. The debits or losses should be the smallest possible, and this necessitates accurate information of the conditions which occasion such losses. By studying the age, sex, occupation and domestic surroundings of various classes of decedents we arrive at facts enabling the state to decrease the losses in proportion to its capability of removing avoidable causes of death. Systematic efforts to prevent death losses, that is sanitary work, can only be intelligently applied by knowing their extent and cause in each locality; and great progress in the saving of life can be made in no country until a fairly accurate system of vital book-keeping, which the registration of vital statistics may be called, is employed.

We therefore renew our recommendation that the laws regulating the collection and registration of vital statistics be so amended that an authentic record shall be made and kept of each marriage, birth and death occurring in the state.

Following will be found reports of investigations made during the year. In no year in the past history of the Board has there been so many petitions received from local authorities for aid and advice. The suppression of epidemic diseases, the proposed introduction of water supplies and sewerage, the abatement of nuisances, and the instruction of local health authorities as to their powers and duties in special cases, have called for and received the careful attention of the Board. The year closes with the promise of many important improvements of a sanitary character calculated to increase the healthfulness of our beloved state.

## Secretary's Report.

Abstract of Proceedings at Meetings of the Board Held During the Year.

#### JANUARY MEETING.

A regular meeting of the State Board of Health was held at the office of the Board in Columbus, January 25, 1893.

Present: Drs. Conklin, Hoover, Wise, Stanton and Professor Nelson. On motion of Prof. Nelson, it was voted to suspend the regular order of business to allow Mrs. Ellis, who was present, to be heard by the Board. Mrs. Ellis requested permission to remove the dead bodies of two of her children from Greenlawn cemetery, Columbus, Ohio, to the cemetery at Newark, Ohio, the cause of death having been diphtheria, and the children having died in the year 1890. She stated that she had secured the consent of the health authorities of both places for such removal, and was willing to comply with any precautions the State Board might direct. Mrs. Ellis was informed that her request would be considered, and that the secretary would inform her of the action taken in regard to it.

The minutes of the fast meeting were then read and approved.

The secretary presented his quarterly report, as follows, which was approved and ordered filed for publication:

#### SECRETARY'S QUARTERLY REPORT.

Mr. President: Your secretary begs leave to offer the following report:

I had the honor to attend, as your delegate, the meeting of the American Public Health Association, held in Mexico City, November 29, 30, and December 1 and 2, 1892.

The meeting was well attended, about one hundred and fifty members being present from the United States and as many from Mexico. The social entertainments provided were never equaled at any former meeting of the Association, and the opportunities to study Mexico and Mexican institutions were most favorable. The meeting was under the patronage of the national government, whose officials actively interested themselves in making it a success. It will undoubtedly give a marked impetus to sanitation in Mexico and will, indirectly, be of benefit to this country. Especially is this likely to be true in regard to more effective measures to be taken to control epidemic diseases. On our way from El Paso, Texas, to Mexico City I saw small-pox patients at no less than four stations, and no one outside of our party seemed to pay any attention to the matter. We had expected to spend one day, going, in Zacatecas, but on account of typhus fever being reported there, went on to Guanajuato. Arriving there it was proposed to visit the Campo Santa, or burial grounds. We were informed that by going at once we could witness a burial. On taking the precaution to inquire the cause of death, I learned that it was typhus fever. On expressing apprehension to the American physician who lives in Guanajuato, he replied, "Oh, you will meet typhus fever every day on our streets," and apparently had fallen into the Mexican apathy concerning the infectious diseases.

With Mexico City within five days' journey from New York, it is apparent that this country is greatly endangered by bad sanitary regulations in Mexico, for it is entirely possible for cholera to be introduced into any city in the United States by a person contracting the disease in Mexico, to say nothing of small-pox and typhus fever which have a much longer incubation period than cholera.

Some very good papers were read in connection with this matter. The one of most interest, at this time, was that by Dr. Eduardo Liceaga, President of the Superior Board of Health of Mexico, on "The Defense of the Ports and Frontier Cities of Mexico against Cholera."

Dr. Liceaga points out that it takes eighteen days for ships coming from Europe to reach Mexico, and seven days from New York, so that cholera contracted before departure from either of those places will have declared itself before the ship reaches a Mexican port. The fact that cholera might be contracted from infection received on shipboard is not lost sight of, and the necessity for disinfecting clothing, baggage and cargo when the ship comes from an infected or suspected port, is insisted upon. This is in accordance with the prevailing opinion in the United States, though contrary to the practice in England's ports. The period of seven days has been adopted by the Superior Board of Health for quarantine and observation of cholera suspects.

When cholera appeared in New York, Mexico adopted rules providing that passengers from the United States should come into Mexico only at certain prescribed points, where sanitary stations were established in charge of medical inspectors. All passengers, baggage and freight were detained for inspection, and persons with suspicious illness were isolated and kept under observation. No trains from the United States were allowed to enter Mexico, but cars loaded with non-suspectible mer-

chandise, after the car had been disinfected, were permitted to be attached to a Mexican train.

It will thus be seen that active measures were taken to defend Mexico against the United States, and very similar to those adopted by this Board to protect Ohio. For national quarantine purposes Mexico has a superior sanitary council composed of the ministry of State, to which is subject the Superior Board of Health, with subordinate sanitary councils at each frontier city and port, presided over by a delegate named by the government. This sanitary staff is ruled by the sanitary code of the Superior Board of Health and by the regulations of the ministry, and is entirely independent of the powers of any state, so that for national quarantine Mexico is much better off than is the United States. "In the case of an epidemic the council is constituted into a permanent session, and receives from consular officers all the notices of ships leaving the infected ports, telegraphic messages sent by the delegates advising what ships arrive at each port of the Gulf or of the Pacific, pointing out their proceedings, the number of days they have taken for their voyage, the ports where they have touched, if they have had communication with other ships on the sea, the number of passengers and crew, their sanitary state, the quality of the bill of Health, and as much information as can interest the public health." Arrangements have been made to establish disinfecting stations at Progreso, Vera Cruz, Tampico on the Gulf, and Acapulco and Mazatlan on the Pacific.

It would thus appear that the Mexican Government is fully in line with modern methods to guard against cholera, which will be a great safeguard to the United States, but is dangerously apathetic concerning the control of small-pox and typhus fever, diseases which are continually prevalent to a greater or less extent, showing that it is the unusual that occasions alarm, and against which measures are aimed. Here diphtheria and scarlet fever are tolerated; there, small-pox and typhus fever.

Among the other more important papers presented were "The Sanitay Relations of Texas and Mexico," by R. M. Swearington, M. D., State Health Officer of Texas; "Contagious Diseases on the Rio Grande Border," by W. M. Yandell, M. D., Health Officer of El Paso, and "The Ground of Safety," by Dr. R. C. Kedzie, of Michigan.

The following officers were elected: Dr. S. H. Durgin, Health Officer of Boston, president; Dr. Eduardo Liceaga, Mexico City, first vice president; Dr. E. P. LaChapelle, Montreal, second vice president; Dr. Irving A. Watson, reclected secretary; Dr. H. D. Holton, Brattleboro, Vt., treasurer. The next meeting will be held in Chicago in October, 1893.

#### SMALL-POX AT AKRON.

Small-pox has been prevailing in Akron since December 29th, twentyuine cases and nine deaths having been reported to date. The origin of the disease is not known. It first appeared among the workmen of Taplin, Rice & Company, who manufacture stoves and other iron ware; three of the workmen were taken ill at about the same time. All of these men worked in the molding department, and it was reported had been exposed to a tramp who had small-pox and who came into the molding-room. There is no proof in support of this story, and it is not now credited by the authorities. Three cases were reported to me December 30th, by the health officer, and I wired to know if virus or assistance was needed, and requested information concerning the origin of the disease. By request I sent the next day ten points of virus, all we had on hand. The following telegram, in answer to mine, was received:

"Patients have been removed to the pest-house, all persons exposed quarantined and will be vaccinated. Origin undoubtedly tramp

No assistance needed at present.

A. A. KOHLER H. O."

January 9th another case was reported; January 10th four cases, January 14th two cases. These were men who worked in the same shop in which the first three cases developed; and as it had been sixteen or eighteen days since they could have been exposed to these first cases, it seemed probable that the source of contagion was somewhere about the shop. The health officer desired to know whether it would be desirable to close the foundry in which all of these men worked, and whether he had authority to do so. The situation seemed to call for a personal visit, and I went to Akron on the 14th and met the board of health that evening. On the following day I visited the small-pox hospital with the health officer. This is a frame building of three rooms, about a mile and a half from the city, and within a short distance of the county infirmary.

There were seven patients in the hospital at the time. Sunday evening I met the board of health again, Mr. Perkins, secretary of Taplin, Rice & Company, and several other citizens being present. The health officer reported two new cases, one a workman of Taplin, Rice & Company, and the other an old colored man. The former was taken sick Friday night, was seen by his physician at that time and again with the health officer Saturday afternoon. He had a temperature on Saturday of 103 1-2, but as he denied other symptoms of small-pox, the house was not quarautined until Sunday evening when he was broken out, thus settling the diagnosis. The colored man was exposed to a colored family in which there was small-pox; this occurred prior to quarantining this family, and as nothing was known of his exposure he had escaped observation. On Sunday morning he broke out with small-pox, and without notifying the health authorities, started to walk to the hospital. On his way he stopped in at a number of houses and at two stores to get warm, thus exposing about sixty people. He died within twenty-four hours after reaching the hospital.

I was informed that the following measure had been enforced by the board: All small-pox cases, as soon as reported, were either removed to

the hospital or placed under quarantine day and night at home. All persons known to have been exposed were vaccinated and quarantined for observation. A recommendation had been made to the board of education that all school children be required to be vaccinated; but this had not been done. The works of Taplin, Rice & Co., were closed the day I arrived, and the molding-room and scratch-room were fumigated with sulphur; all old clothes, rags, etc., found there were burned. An order had been made providing that all persons employed in this establishment must be vaccinated before resuming work. All of the cases occurring among the men from this establishment had been from the molding-room, except the man taken sick Friday, reported Sunday, who worked in another department. The board was considering the question of closing the works and quarantining all the workmen, about two hundred and fifty, and their families. Being called upon at a meeting held the following day, I recommended the following plan which was adopted:

1st. To extend the vaccination order so as to include the families and all the inmates of houses in which the workmen of Taplin, Rice & Co., lived.

2d. To appoint a physician to examine daily each workman before he should go to work, and also examine each of the persons included in the above vaccination order.

3d. To exclude from school all children from these families.

4th. To fumigate the entire works of Taplin, Rice & Co., before permitting the men to resume work.

This, I considered, would remove the necessity of attempting to quarantine about one thousand people and of shutting down a large factory, thus throwing two hundred and fifty men out of employment. I advised also that the board should require vaccination of school children and appoint one or more physicians to vaccinate the poor. These recommendations were adopted, and it was also decided to call a meeting of the manufacturers and urge them to require their employes to be vaccinated. The necess ty for quarantining suspicious cases, such as the one spoken of with a temperature of 103 1-2, was urged, and also the importance of the immediate vaccination of persons exposed to small-pox.

The situation was much complicated on account of the searcity of virus. When the disease appeared there was no vaccine virus in Akron; and none could be obtained when I was there with which to vaccinate sixty or more persons exposed to the negro who walked to the hospital. An ample supply was obtained later. In this connection I desire to call attention to the recommendation in the last annual report that a vaccine farm be established in connection with the Ohio State University. It happens nearly always that when smal-pox occurs no virus is at hand; and during an epidemic much bad or unreliable virus is used, so that not only is the cause of vaccination injured, but by not affording protection, cases of small-pox occur which might have been prevented.

Since my return from Akron, January 16th, nine additional cases of small-pox have been reported. One case developed in a workman of the

Hard Rubber Co., where several hundred hands are employed. He was taken sick Monday, January 16th. On the 19th feeling better and not knowing what ailed him, he walked to a physician's office to be vaccinated. On examination the physician found he had varioloid. Several persons who were in the office at the time were at once vaccinated. The establishment of the Hard Rubber Co., was thoroughly fumigated, and all the employes were vaccinated. Another case, which occurred January 21st, was in an employe of the Diamond Match Works. The origin of these cases is not known, and I consider this the worst feature of the situation at Akron. The health officer writes me that the only known source of exposure in the case of the Hard Rubber Company employe was to another employe who worked there a day after his brother had broken out with small-pox; but this was December 29th or 30th and would give an incubation period of from seventeen to eighteen days. In the case at the Match Works, the exposure was to girls working there who came from a house in which there was small-pox. The exposure in this case was on December 29th and the date of commencement of illness January 20th, giving an incubation period of twenty-two days. While it is barely possible that the incubation period of small-pox may be extended to seventeen days, it is contrary to all experience for it to be lengthened to twenty-two days. In justice to the health authorities of Akron it should be stated that these persons who went to work from houses containing small-pox cases did so on the day small-pox was reported to the board of health and before arrangements for quarantine could be made.

My latest report from Akron was received yesterday, January 24th, stating that one case—the first since the 21st—had occurred, and three deaths.

The necessity for establishing quarantine against Akron has been considered, but to make such quarantine efficient would be a matter of the greatest difficulty. If the Akron authorities will strictly enforce the measures they have already adopted, namely: to promptly quarantine all cases and suspected cases of small-pox, and also all persons exposed to small-pox, unless vaccinated and kept under observation, there is no great danger of the disease spreading to other parts of the state. Millersburg, I note by the papers of yesterday, has quarantined against Akron and also against Barberton and Cuyahoga Falls, places near Akron.

The health officer of Akron has wired me promptly of the development of all new cases; so that I have been kept fully informed of the situation there, and through the press have notified the public.

Small-pox was also reported at Barberton and Canton. I telegraphed the authorities at these places and found there was no truth in the reports and corrections were made in the newspapers.

January 18th a death from Asiatic cholera was reported at St. Paul, Minn. I telegraphed Dr. Hoyt, health commissioner of St. Paul, and learned that the person had died from cholera morbus, and published a correct report in the papers.

January 23d the papers reported a case of leprosy at Napoleon, Ohio. In answer to a telegram the mayor reported that they had a sick Chinaman but no leprosy. This report was also corrected.

Inquiry was made of the council, board of health, and mayor of Fostoria, concerning the disposal of the city's sewage and its connection with the alleged prevalence of diphtheria at that place, which was reported at the last meeting. It was learned that there were but four or five cases of diphtheria in Fostoria, and that these were not in the neighborhood of the outlet of the sewer. I was informed by the mayor that steps had already been taken to extend the outlet of their sewerage system beyond the corporation line, and that the work would be begun in the spring.

Pursuant to instructions communications were addressed to the State Boards of Health of Pennsylvania and West Virginia relative to holding a meeting with the Ohio Board to consider measures to prevent the introduction of cholera. Both Boards, or rather the secretaries, favored the proposition, but the suggestion was made that such a conference should not be held until after action was taken by Congress on quarantine and immigration. It was also suggested that as a meeting of the National Conference of State Boards of Health would possibly be held soon, the conference of the Pennsylvania, West Virginia, and Ohio Boards might be held at the same time and place. A meeting of the National Conference will possibly be held in Indianapolis about the middle of March.

The president has appointed a legislative committee consisting of the following members: Prof. Nelson, Dr. Hoover, and Dr. Stanton. Prof. Nelson, Chairman, will be able to report on the Health Bill, which has been introduced in legislature.

According to instructions, arrangements have been completed for a joint meeting of the State and Local Boards of Health, to be held January 26th and 27th. The hall of the House of Representatives has been secured for the session Thursday night, and the members of legislature have been invited to be present.

Dr. Stanton made a report of the small-pox situation at Norwood, near Cincinnati.

Dr. Wise moved that the secretary be instructed to notify the President of the C., A. & C. Ry., that the State Board of Health had been advised by the Attorney-General that it had no authority to raise a quaranine established by the local authorities. The motion was seconded and carried.

The following resolution offered by Dr. Stanton was adopted:

Resolved, That owing to the measures being enforced by the health authorities of Akron to prevent the spread of small-pox, and considering the limited prevalence of the disease in that city, it is the sense of this Board that the situation at Akron at the present does not warrant attempts to quarantine against that city.

Motion seconded and carried.

Dr. Conklin made a report of diphtheria at Palmyra, which he had investigated, and stated that proper precautions were now being taken to prevent spread of the disease.

Prof. Nelson reported on the action of the legislative committee in preparing the bill to amend the health laws.

Dr. Hoover, chairman of the committee appointed to draft a memorial to Congress for the restriction of immigration, made a report, and submitted a copy of the memorial, which he stated was sent to each board of health in the state, with a request to adopt and forward the same to their respective representatives in Congress.

The report was approved and adopted.

On motion of Dr. Stanton, it was voted to grant the request of Mrs. Ellis, and permit the removal of the dead bodies of her children overland from Columbus to Newark, provided the disinterment and removal were done in accordance with instructions to be given by the secretary.

The question of establishing a vaccine farm in connection with the Ohio State University was discussed, and on motion of Dr. Hoover, the legislative committee was instructed to formulate a bill to accomplish this end.

Adjourned to 9:30 A. M. of the following day.

#### Adjourned Session, January 26, 1893.

The Board reassembled at 10:30 A. M.

A communication was presented from Joseph Josephs & Bro., importers of Cincinnati, in regard to importing cotton waste.

On motion of Dr. Hoover, the question of admitting such waste was referred to the secretary of the treasury.

Communications were presented requesting the Board to make a sanitary exhibit at the World's Columbian Exposition.

On motion of Dr. Hoover, the secretary was instructed to say that the Board had decided not to make such an exhibit.

The secretary presented a report on the water supplies of a number of Ohio cities, based on replies received in answer to a circular letter sent out some time before. He urged that the Board should take some action towards remedying the conditions reported in many places.

On motion of Dr. Hoover, it was voted to appoint committees to investigate and report on the water supply of each of those cities that had presented evidence of having a polluted supply.

A communication was presented from the board of health of Hoyts-ville in regard to the prevalence of diphtheria at that place.

On motion of Dr. Stanton, the secretary was instructed to visit Hoytsville, if found necessary.

Adjourned to meet in joint session with the local boards of health.

#### APRIL MEETING.

A regular meeting of the State Board of Health was held in Columbus, April 26th, 1893.

Present: Drs. Conklin, Hoover, Wise, Stanton, Miller and Kahle. The minutes of last regular meeting were read and approved.

The secretary presented his quarterly report, which was as follows:

#### SECRETARY'S QUARTERLY REPORT.

Mr. President: I have the honor to present the following report for the past quarter:

The committee appointed to revise the bill amending the health laws, consisting of Prot. Nelson, Drs. Hoover and Stanton, and the secretary, met in Columbus and adopted a bill which was introduced in the House of Representatives by Mr. Fisher of Preble. The bill passed the Senate and was signed and became a law March 14, 1893.

By a joint resolution of Senator Carpenter of Meigs, 10,000 copies of the new law, including other sections of the health chapter, were printed for distribution, saving the Board several hundred of dollars for printing. Copies of the new law have been sent to every city, village and township in the state, to many of the newspapers, and to all the State Boards of Health.

Together with the law, there were sent to the township clerks full instructions for organizing township boards of health, including rules and orders recommended for their adoption, and samples of all blanks and books of record required by such boards.

It has been both surprising and gratifying to note the enthusiasm with which the township trustees have taken up the matter of establishing boards of health; although it has been but about three weeks since the law and instructions for organizing township boards of health were sent out—owing to delay in printing the health laws—the organization of a number of township boards of health has already been effected. Letters have been received from the clerks of the majority of these boards, and quite a number have expressed themselves as highly pleased with the law. Nearly all of them have adopted the orders and regulations recommended by the State Board of Health, and a large number have expressed the wish to supply themselves with a complete set of blanks and books for properly carrying on the work of the office.

I have prepared and had printed all the blanks except one, but have delayed mailing them as I am doubtful as to the best plan for securing reports of contagious diseases in the township, and desire the advice of the Board.

It was learned that in quite a number of the townships there is no newspaper printed in which the orders and regulations of township boards of health could be printed; and in response to numerous requests from township clerks I have had these orders and regulations printed on large cards to be posted in the township. The orders and regulations, with an introduction calling attention to the law as it applies to township boards of health, have also been printed, and a sufficient number will be sent, on request, to each township board to place a copy in each family in the township.

One township clerk reported that the trustees of his township refused to organize a board of health. I requested him to notify the trustees that the law was mandatory, and that the State Board of Health would see that its provisions were enforced.

Prior to the passage of the recent law boards of health had already been established in all cities in Ohio, and less than three hundred of all the villages had failed to establish such boards. To these copies of the new law were sent, and full instructions for organizing a board of health.

At the last meeting of the Board I presented a report on the small-pox epidemic in Akron. The disease has continued there to the present time, though not to any great extent.

I have been called there frequently, and have rendered all the assistance possible. For an interval of two weeks or more no cases were reported, but the day before the last families in quarantine were to be discharged, two cases developed. One of these was a guard who had carelessly associated with a nurse at the house he was guarding. The guard died of the disease. The other case was a child in the family of another guard. It was learned that this guard had also been with a small-pox nurse, and had carried the disease home to his wife, who had varioloid in such a mild form that her disease was not recognized (no physician being called), and the child contracted the disease from its mother.

The situation in Akron to-day, April 26th, as reported by the Board of Health is as follows: "Two houses quarantined on account of small-pox, ready to dismiss, and one house quarantined on account of the Wadsworth girl. No cases since March 13th except the case sent from Canton."

March 22d, Dr. Reed, health officer of Mansfield, telegraphed that a case of small-pox had been reported to him in a family living about two miles from that city, the patient having been exposed in Akron. I at once notified the trustees of the township to strictly quarantine the family, and to report what was done. On the following day Dr. Reed telegraphed that the Mansfield Board of Health had quarantined all railroads coming direct from or operating with Akron, until Akron maintained a protective quarantine against her own cases.

While in Lima, on March 25th, Dr. Reed telegraphed me to come to Mansfield and require the trustees to enforce quarantine. I went there

the following day; met Mr. Zeller and another township trustee, and with them visited the house in which the case of small-pox had occurred. The house, fortunately, is completely isolated; and the trustees agreed to place guards over the house day and night. The family, named Foulks, consisted of fourteen persons. The children had been vaccinated four or five days before, but the adult members and all children were revaccinated on the day of my visit. It was learned that children in the family had attended school for several days after the eruption appeared in the small-pox case, and as the majority of the school children had never been vaccinated it seemed probable that other cases would develop. I urged the trustees to have all the school children vaccinated at once, and they agreed to attend to this.

According to the history of the small-pox case, given by the attending physician, the patient was taken sick sixteen days after his return from Akron (Akron authorities reported that it was ten days.) He spent but one day there, and did not know when or where he was exposed.

Twelve other cases of small-pox subsequently developed in this family.

Within the last week several letters and telegrams have been received from Dr. Reed of Mansfield, stating that the small-pox cases were not being properly quarantined, and requesting me to come. I telegraphed the township board of health that we would hold them responsible for the proper isolation of the cases, and required a day and a night guard; Dr Reed having reported that there was but one guard. The township board answered that the cases were properly guarded, night and day.

During my absence in New York, Dr. Conklin reported that a man coming from Akton had been found sick with small-pox in Canton, but had been promotly returned to Akron.

April 22d D. Lyman, health officer of Wadsworth. Medina county, reported a case of small-pox traceable to Akron. I learned by telegram that the patient was quarantined, that the other families where there had been great exposure were also quarantined, and that the family having the small-pox case had been vaccinated. I telegraphed instructions to hunt up and vaccinate all exposed persons, and sent vaccine virus for that purpose.

The ease at Wadsworth was a young girl eleven years old, who had been visiting a sister in Akron. A sister of the patient who lives in another family in Wadsworth, and who had associated with the patient, was quarantined with the family in which she lives. The man, with whom this girl was living, broke the quarantine and sent the girl to Akron to the sister whom the patient had visited. He was arrested and fined, and again quarantined. The Akron authorities were notified and they quarantined the girl and the sister with whom she was staying.

I telegraphed the health officer of Akron for a full report of the exposure of the Wadsworth case, and received the following reply:

AKRON O., April 24, 1893.

The Wadsworth patient was running around Akron the day the Canton case was sent here. She was taken sick tourteen days later. Whether her exposure was from that cause I can't find out definitely. That was the only source exposure possible.

A. A. KOHLER, H. O.

A communication was received from the board of visitors of Columbiana county, reporting that the infirmary was in an exceedingly bad sanitary condition, and requesting me to make an investigation of that institution at once. Dr. Couklin and myself, in company with Mr. John M. Sears of Salem, president of the county board of visitors, made an investigation of the infirmary on March 16th. A report of our investigation was made to the county visiting board.

The report effected good results in a summary manner.

The governor at once sent Dr. Richardson, superintendent of the Central insane asylum, to the infirmary, who selected twenty-seven of the most helpless of the insane inmates to be transferred to the Central asylum. These were received some weeks ago. The superintendent of the infirmary was discharged, and another, said to be a fit man, was appointed. Mr. McCoy, representative from Columbiana county, informed me that the county commissioners had employed a competent man to view the insane building, and that it would either be completely overhauled, the entire inside work being removed and properly replaced, or a new building constructed. The recommendations in the report in regard to changes in sewerage and water supply will also be carried out.

I would suggest, in this connection, that as it is possible that other infirmaries in the state may be found in as bad sanitary condition as was this one, the Board should take some action looking toward an investigation of all county infirmaries.

April 5th, I attended the meeting of the National Conference of State Boards of Health and Port Quarantine Officers, held in New York.

I sent to each member of the Board the newspaper accounts of the meeting, and lately copies of the reports of committees and resolutions adopted by the conference. This represents the official work of the conference, except the reports from the various State Boards represented as to the measures that each had taken to prevent cholera. These reports have not yet been received from the stenographer; but I may be allowed to say that the work of this Board in that direction compares favorably with that of other State Boards.

I visited the quarantine station at New York, and was one of the committee that formulated the report on the station, which was adopted by the conference.

The proposition to disinfect the baggage of all immigrants coming to this country met with some opposition from the port quarantine authorities, but was carried.

It is simply impossible, however, for this to be done at New York with their present disinfecting plant, which is entirely inadequate, and in construction far behind modern requirements. More than 5,000 immigrants have passed through New York quarantine in one day, and you may judge what it would be to disinfect the amount of baggage they would carry. I would call attention to the fact that, although the cholera has been in Europe all winter, no baggage has been disinfected at New York quarantine station since last October.

Dr. Montizambert, who opposed in the conference the disinfection of the baggage of all immigrants as impracticable and unnecessary, has informed me that he has arranged for such disinfection in connection with the Grosse Isle quarantine in the St Lawrence.

Under the regulations of the Marine Hospital Service immigrants from infected districts destined for the United States are held at ports of departure for five days, and their baggage is there disinfected; but, so far as I can learn, this precaution is not enforced against immigrants going to Canada, who may come thence to the United States. For this reason I have had special apprehension of danger from Canada; but as during summer months nearly all immigrants to Canada come through Grosse Isle quarantine, disinfection of the baggage of all immigrants at that port will give us much greater security. Press reports from Montreal, April 14, 1893, represent that immigrants from cholera infected places on the continent are being smuggled into Canada via Liverpool, England. In answer to a letter of inquiry concerning this report Dr. Pelletier, secretary of the Provincial Board of Health of Quebec, made the following reply:

April 24, 1893.

DR. C. O. PROBST, Secretary tate Board of Health, Columbus, Ohio:

DEAR DOCTOR: In answer to your letter of the 21st inst., I beg to say that we are unable to state whether the rumor you allude to is true or not. As to the probability of immigrants from infected districts of the European continent sailing for America via English ports, our Board has always believed in it, and for that reason it has constantly been asking that the baggage of all immigrants without distinction be disinfected.

This we have ultimately succeeded in obtaining, and the federal government has just passed an order in council providing for such disinfection, which we consider as a sufficient protection.

I have the honor to be your obedient servant, (Signed)

ELZEAR PELLETIER, Secretary.

A meeting of the sanitary council of the Mississippi Valley, of which Dr. Pinckney Thompson, of Kentucky, is president, was held between the

sessions of the Conference of State Boards. This council, which has now been enlarged so as to include a great many of the interior states, may, in my judgment, be the means of effecting great good in the matter of inter-state quarantine, and I would ask that my action as a member of the council be sustained by this Board. A committee of the council, of which I am a member, presented the following request to the secretary of the treasury:

CHICAGO, April 19, 1893.

The Honorable, the Secretary of the Treasury, Washington, D. C.:

SIR: The undersigned, a committee of the sanitary council of the Mississippi Valley, were appointed to formulate the request embodied in the following resolution, adopted by the council at its recent meeting April 7th, in New York City:

"Resolved, That the secretary of the treasury be formally requested, by the sanitary council of the Mississippi Valley, to authorize the U.S. Marine Hospital Service to establish a system of Immigrant Inspection Service, with especial reference to Asiatic cholera, and, substantially, on the lines of the service maintained with such beneficial results in 1882."

The Immigrant Inspection Service of 1882, to which reference is above made, grew out of the demonstrated imbility of the state and municipal health boards and officials, acting independently, to suppress the epidemic of small-pox, which began in 1880, through infected immigrants and which continued until midsummer, 1882, through successive arrivals of these infected immigrants, who found their way into the interior despite the enforcement of such precautions as were possible by individual health authorities in their respective territories.

In June, 1882, a continuous sanitary surveillance of immigrant travel, from the port of arrival to the point of ultimate destination, was begun by the national government through the agency of the National Board of Health. Such surveillance consisted of successive inspections at points of destination between the seaboard and points of ultimate destination; of vaccination of all unprotected; of systematic observation of suspicious sickness; prompt removal and isolation o discovered small-pox or other contagious diseases; of disinfection of baggage, clothing, cars, etc.

This service was continued until December, 1882, and while, during the five months preceding the inauguration of the service, there had been twelve serious outbreaks of small-pox in Illinois, alone caused by infected immigrants, during the seven months of the service, June to December, 1882, there was not a single outbreak in that state due to immigrants and only two cases developed among the immigrants themselves after coming within the purview of the service—this too, in face of the heaviest autumn immigration, with one exception, ever known. During these seven months a total of 115,057 immigrants were in pected in the Western Inspection District alone, and the epidemic in Illinois was practically suppressed, after a duration of two and a half years, and after having cost

the state over four million dollars. Similar results obtained throughout the whole area covered by the service from the seaboard to the states beyond the Mississippi.

The system was demonstrated to be in the interest—

Of our own people, who were secured by it from imported contagion and to whom confidence was thereby restored.

Of the immigrant, who was protected through it from the effect of his own neglect and of the lack of proper sanitary precautions, and to whom it brought better care and increased comfort in transit across the country.

And of the common carriers of these immigrants, who were relieved from the vexatious and costly interruption of travel and traffic caused by the enforcement of the local and state quarantines.

The sanitary council of the Mississippi Valley now urges that the Immigrant Inspection Service be re-established with special reference to the exclusion of Asiatic cholera and—only less important—of typhus fever and small-pox. In making this request it is realized that the regulations of the secretary of the treasury, governing inspections at foreign ports and maritime quarantine generally, promise a greater degree of protection from abroad and on the seaboard than ever heretofore attained. It is also realized, however, and as the result of many years' practical experience, that the sense of responsibility and consequent thoughtlessness of work by quarantine officers and inspectors bear a direct relation to the distance between the station of the inspector or quarantine officer and the point of ultimate destination of the immigrant. Inspectors on duty at Liverpool, or Havre, or Bremen, or Hamburg, surgeons on board vessels from these ports, and quarantine officials at our own ports, lack the stimulus that an inspector in Ohio, or Indiana, or Illinois feels from the knowledge that if Asiatic cholera, or small-pox, or typhus fever should break out among the immigrants passing through his hands it could be readily traced home to him—not alone from the towns and prairies of his own state, but from the lumber camps and villages of Wisconsin, the wheat fields of Iowa and Minnesota, or from still more remote regions beyond the Mississippi and Missouri. Such stimulus is necessary in order to secure vigilance, inspection and thoroughness in enforcing necessary measures of prevention.

The preventive work abroad and on our frontiers will, very probably, exclude a large majority of the infected persons and things—immigrants and their effects—which might otherwise be admitted. A single case of Asiatic cholera in Chicago during the next six months would in all probability and for obvious reasons, serve to cause a serious financial disaster. It is respectfully urged that those to whom have been confided the authority and the means of protecting the public health should be satisfied with nothing less than the fullest attainable protection.

The committee will promptly act upon any intimation from the secretary that further argument or details are desired.

Meantime we are, sir, very respectfully,

Your obedient servants,

JOHN H. RAUCH, *Chairman*.

BENJAMIN LEE, Pennsylvania,
PINCKNEY THOMPSON, Kentucky,
C. N. METCALF, Indiana,

L. F. SALOMON, Louisiana,
WIRT JOHNSTON, Mississippi,
J. T. REEVE, Wisconsin,
C. O. PROBST, Ohio.

F. W. REILLY, Illinois, Secretary.

On motion of Dr. Hoover, the suggestions contained in the secretary's report were made a special order for the following day, April 27.

Dr. Hoover presented a report from the committee appointed to draft a bill providing for a state vaccine farm. It was the opinion of the committee that it was not advisable to attempt to secure such legislation prior to the passage of the amendment to the health laws.

On motion of Dr. Miller, it was voted to accept the report and continue the committee.

A communication was read from Dr. S. Pence, of Spencerville, reporting a nuisance arising from house drainage, and requesting an investigation by a member of the Board, suggesting Dr. Kahle.

On motion of Dr. Hoover, Dr. Kahle was appointed to visit Spencerville and take such action as he might deem necessary.

A communication was presented from Mr. Hott, of Berlin, stating that a nuisance was threatened by the proposed extension of a cemetery in the village.

On motion of Dr. Stanton, Dr. Wise was requested to visit Berlin and take such action as appeared necessary.

A communication was presented from Dr. Cox, Health Officer, of Lorain, reporting the prevalence of typhoid fever, and requesting the Board to investigate the public water supply.

On motion of Dr. Hoover, Dr. Miller was requested to go to Lorain and make an investigation.

Several communications were presented from residents of Belleville in regard to the proposed extension of a cemetery immediately adjoining the village.

On motion of Dr. Hoover, the matter was referred to Prof. Nelson, with the request that it be investigated.

A communication was presented from Dr. Kitzmiller, health officer of Piqua, in regard to the canal being used to some extent as a water supply for Piqua.

On motion of Dr. Miller, Dr. Hoover was requested to investigate the complaint.

A communication was presented from the Board of Health of Akron, in regard to a case of small-pox sent to Akron by the Canton

Board of Health, and charging Dr. Couklin with neglect of duty. A communication was read from the Canton Board of Health, relieving Dr. Conklin of all blame in the matter—except as a member of the Canton Board of Health; and one of the same tenor from Dr. Post, health officer of Canton.

On motion of Dr. Hoover, it was voted to refer the matter to a committee for investigation. Dr. Wise was called to the chair, and appointed Drs. Hoover and Stanton as members of this committee.

The secretary presented maps and plans of a proposed system of sewerage for Clyde, Ohio, and stated that the approval of the Board was requested to establish the outlet into Raccoon creek at a point near where it is crossed by the Western Reserve and Maumee turnpike.

On motion of Dr. Stanton, it was voted that the proposed outlet for the sewerage system of Clyde be approved.

A communication was presented from Mr. A. C. Robinson, of Greenville, in regard to the introduction of a new water supply for that village. The secretary stated that he had requested full particulars in regard to the wells which were to furnish the supply, and the results of chemical analysis, which Mr. Robinson stated has been made, but that such information has not been furnished.

On motion of Dr. Stanton, the matter was referred to the secretary for further investigation.

On motion of Dr. Stanton, it was voted that requests relative to approval of proposed sources of supply for water works, and of outlets for proposed sewerage systems, be referred to a committee consisting of the secretary and one member of the Board, to be appointed by the president.

A communication was presented from Mr. DeWitt, of West Mill Grove, stating that the city of Fostoria proposed to establish an outlet for her sewers into a small stream which flows through that village, and protesting against allowing this to be done.

On motion of Dr. Kahle, the matter was referred to a committee composed of the secretary and a member of the Board, to be appointed by the president. The president appointed Dr. Kahle a member of this committee.

Dr. Miller referred to the dumping of the night soil of Cleveland into Lake Eric, and stated that in his opinion the state should take some action to stop it. The matter was referred to a committee composed of Drs. Miller and Stanton, and the secretary.

A communication was presented from Mr. Boughton, a member of the board of health of Bowling Green, in regard to a nuisance arising from drainage and dumping into two stone quarries within the village.

On motion of Dr. Stanton, the secretary was instructed to say that the local board of health had full jurisdiction in such cases, and should take steps to abate the nuisance.

Adjourned unt 19 A. M. of the following day.

SECOND SESSION, APRIL 27, 1893-9 A. M.

Present as before, except Dr. Miller.

A communication was presented from Mr. Strong, of Ashtabula, in regard to a change of outlet of the sewerage system of Ashtabula.

On motion, the communication was referred to the secretary and a member of the Board to be appointed by the president, for further investigation.

A communication was read from Dr. H. B. Baker, secretary of the Michigan State Board of Health, in regard to establishing a line of inspection and disinfection on the eastern border of Ohio.

The secretary was instructed to refer the communication to the surgeon-general of the Marine Hospital Service, with a request for information as to what had been done by his department in regard to the matter.

Dr. Conklin and the secretary presented a report of an investigation of the sanitary condition of the Columbiana county infirmary.

On motion of Dr. Wise, the report was received and approved.

On motion of Prof. Nelson, it was voted to request the surgeon-general of the Marine Hospital Service to station a medical officer of the United States government at all quarantine stations in the United States.

Dr. Stanton moved that the action of the National Conference of State Boards of Health in urging that the baggage of all immigrants should be disenfected be approved by the Ohio Board.

The motion was adopted, and the secretary instructed to send a copy to the surgeon-general of the Marine Hospital Service.

On motion of Dr. Kahle, it was voted to increase the edition of the Monthly Sanitary Record to  $5{,}000$  copies,  $2{,}500$  without covers, and send copies to each municipal and township board of health.

The secretary was authorized to arrange for bacteriological examinations in case of cholera or suspected cases of cholera, when he deemed it necessary.

Drs. Hoover, Stanton and the secretary were appointed a committee to prepare rules and regulations of the State Board of Health, to be submitted to the Board at its next meeting.

Prof. Nelson submitted a report on the water supplies of Upper Sandusky and Bucyrus. The report was received, the committee continued, and authorized to attend a meeting of the Water Works Company to be held in Upper Sandusky.

Prof. Nelson submitted a report on the small-pox situation in the township near Mansfield.

Adjourned to 2 P. M.

THIRD SESSION, APRIL 27, 1893--2 P. M.

On motion, the report of Prof. Nelson on the small-pox situation near Mansfield, was received and approved.

The secretary was instructed to accompany the committee to meet the Water Works Company of Upper Sandusky.

The secretary was instructed to consult the Attorney-General in regard to the legal status of existing boards of health.

A communication was presented from Mr. George P. Hunter, of Warren, in regard to the revision of the health laws.

The committee, consisting of Drs. Stanton, Kahle and the secretary, appointed to investigate the water supply of Lima, presented a report.

On motion of Dr. Hoover, the report was received, and the recommendations of the committee approved.

The secretary presented a circular of "Instructions to Boards of Health for Dealing with Cholera."

On motion of Prof. Nelson, the report was adopted and ordered printed.

Adjourned.

#### SPECIAL MEETING.

A special meeting of the State Board of Health was held in Columbus, May 11, 1893.

The meeting was called to order by the secretary at 7:15 P. M.

Present: Drs. Wise, Hoover, Kahle, Stanton and Prof. Nelson.

On motion of Dr. Stanton, Dr. Wise was elected president pro tem.

The secretary presented the following copy of an opinion of the Attorney-General in regard to Dr. S. A. Conklin's membership on the State Board of Health:

OFFICE OF THE ATTORNEY GENERAL, STATE OF OHIO,

COLUMBUS, May 9, 1893.

Hon. WILLIAM MCKINLEY, JR., Governor of Ohio:

My DEAR SIR: In your favor of the 5th inst., you submit to me the following question:

"The reports of this office show that Samuel A. Conklin, of Stark county, was on January 27, 1890, appointed (nominated) as member of the State Board of Health for the term ending December 13, 1893, vice W. H. Cretcher, deceased. The records also show that he was commissioned as such member of the Board of Health on January 29, 1890; but the records fail to show that he was confirmed by the Senate as required by law. The Senate Journal for 1890 shows (see page 110, S. J.) that said Samuel A. Conklin was duly nominated by Governor Campbell for member of the Board of Health as aforesaid on January 27, 1890, but it appears that there is no record in said printèd Journal of his confirmation by the Senate."

You inclose a statement from the Clerk of the Senate to the effect that the records of that office fail to show that the Senate confirmed the nomination, or consented to the appointment; and ask me to inform you whether under the facts, as stated, Samuel A. Conklin is a legal member of the State Board of Health.

Section one of the act of April 14, 1886 (83 O. L., 77), provides: "That the Governor, with the advice and consent of the Senate, shall appoint seven persons, who (with the Attorney-General, who shall be en officio a member of said board) shall constitute the State Board of Health."

This law does not vest in the Governor full, final, and absolute authority to appoint a member of the State Board of Health; the power given the Governor is limited, conditional and incomplete. The Governor may nominate, but the Senate must consent before the appointment becomes legal and effective. A necessary element is the approval of the Senate. (State ex rel. Attorney-General v. Bryson, 44 O. S., 466.) This confirmation by the Senate, is an affirmative act; silence does not give consent in such a case. Neglect to corsent is as fatal as refusal to consent.

The Senate never having advised and consented to the appointment of Mr. Couklin, the Governor, in point of fact, never appointed him with the advice and consent of the Senate, a member of the board. The commission issued to him by the Governor, was, therefore, issued under a misapprehension of fact and without authority of law. A commission is not in itself title to an office; it is only evidence of title; high evidence, it is true, but still evidence which may be impeached and overthrown in a proper case such as this, when it clearly appears from the official records that the person holding the commission was not in fact duly and legally appointed as the commission assumes he was.

It is my opinion, therefore, that Samuel A. Conklin is not a legal member of the State Board of Health.

Yours very respectfully,

(Signed.)

J. K. RICHARDS, Att y-General.

On motion of Prof. Nelson, the opinion was ordered spread on the minutes of the meeting.

The secretary stated that Dr. Hoover, whose appointment had likewise not been confirmed by the Senate, had presented his resignation to the Governor, who had accepted the resignation and reappointed Dr. Hoover for the original term of his office, subject to confirmation by the Senate.

The chair announced that nominations for President to fill the unexpired term of Dr. Conklin would be in order.

Dr. Stanton nominated Prof. Nelson. Dr. Kahle seconded the nomination. Dr. Hoover moved that the secretary be instructed to cast a ballot for Prof. Nelson as President. The motion was carried. The secretary reported, having cast the ballot, and the chair declared Prof. Nelson elected.

Prof. Nelson briefly thanked the Board for the honor conferred upon him.

Dr. Stanton presented the following notice:

I hereby give notice that at the next regular meeting of this Board I will offer an amendment to the by-laws providing that a vice-prisident shall be elected annually, at the time of electing the president: said vice-president to act as president in the absence or disability of the president.

Prof. Nelson presented the following notice;

I hereby give notice that at the next regular meeting of the State Board of Health I will offer a resolution to this effect: That the secretary of the State Board of Health shall have authority in any great emergency to call a meeting of the Board; but it is understood that the emergency must be such that time will not permit consultation with the president.

On motion of Prof. Nelson, the secretary was instructed to consult the Attorney-General in regard to allowing expenses of Dr. Conklin as a member of the board, prior to the date of his opinion declaring Dr. Conklin not to be a legal member of the Board.

An invitation was read from the Akron Board of Health to meet with them to celebrate the suppression of small-pox in that city.

On motion of Dr. Hoover, the invitation was accepted, and the secretary and members authorized to attend the meeting.

A petition from Orbiston, requesting the Board to aid in abating a nuisance in that place, was presented by the secretary.

Dr. Hoover moved that the secretary be instructed to go and investigate the complaint. Dr. Kahle moved to amend by including Dr. Stanton on the committee.

The motion as amended was carried.

Dr. Stanton presented a petition from residents of Cincinnati, in regard to abating a nuisance in that city.

On motion of Dr. Stanton, it was voted to refer the petition to the health officer of Cincinnati, and request that proper action be taken.

A communication was presented from the superintendent of the Medina county infirmary requesting that an investigation of the sanitary condition of the institution be made.

On motion of Dr. Kalıle, Dr. Wise and the secretary were appointed a committee to make the investigation.

Prof. Nelson moved that the secretary be placed on the committee to visit Upper Sandusky. The motion was carried.

Dr. Kahle submitted a report of his investigation at Spencerville. On motion, the report was received and ordered filed.

There being no further business, the Board adjourned.

## JUNE MEETING.

The State Board of Health met in regular session in Sandusky, convening at 8:30, A. M., June 30, 1893.

Present: Drs. Hoover, Stanton, Kahle and Prof. Nelson. Prof. Nelson in the chair.

The minutes of the last meeting were read and approved.

The secretary presented his quarterly report, as follows:

#### REPORT OF THE SECRETARY.

MR. PRESIDENT: I have the honor to submit the following report for the months of May and June, covering the period since the last regular meeting of the Board.

The work of organizing township boards of health has occupied much of my time. There are now 482 municipal, and 728 township boards of

health. This leaves 150 of the former, and 625 of the latter to be organized.

We have sent out 3,200 of the orders and regulations for township boards, printed on carboard for posting in townships in which no newspapers are published; 25,000 of the orders and regulations for township boards in pamphlet form for distribution to householders; 12,000 pamphlets on the prevention of contagious diseases, and 16,400 samples of blank forms.

May 13, I was called to Ashville on account of an outbreak of diphtheria. Some four or five cases had occurred, and the board of health were uncertain as to their powers and duties to prevent spread of the disease.

I found that the rules and regulations of the board had not been legally adopted and would not meet the requirements of the emergency. I advised them to adopt special quarantine orders, applicable to the houses in which diphtheria had occurred, and to serve a copy on the occupants of each of such houses. This was done. I also furnished them with rules and regulations for local boards of health, recommended by the state board, and advised them to adopt and publish the same at once. This they agreed to do. The disease was promptly suppressed.

I was appointed by the president to attend a cholera conference at Ann Arbor, Mich., June 15 and 16, 1893, and presented a paper on "What Ohio is doing to prevent the introduction and spread of cholera." Dr. Wise accompanied me to Ann Arbor. The meeting was only fairly well attended, but there were many interesting features.

We were most interested in the work of the Laboratory of Hygiene, which is a department of the Ann Arbor University, under the charge of Drs. Vaughan and Novy. Any person in Michigan may have samples of suspected food or water examined there for a fee of ten dollars, which is supposed to cover cost of material. This holds good only during school months; at other times the fee is twenty-five dollars.

Nothing specially new was presented at the meeting.

As special reports I have to submit:

- (a) Paper read at Ann Arbor, Mich., Cholera Conference—"What Ohio is doing to prevent the Introduction and Spread of Cholera."
  - (b) Report on Garbage disposal at Detroit.
  - (c) Report on Typhoid Fever at Huron.
  - (d) Report on Typhoid Fever at Orrville.
  - (e) Report on Small-pox at Canton.
  - (t) Report on Extension of Cemetery at Berlin, Holmes county.
  - (g) Report on Sanitary condition of Kenyon Military Academy.

On motion of Dr. Hoover, the report was received.

Drs. Stanton and Probst, committee, presented a report of an investigation of the sewage disposal of the Warren county infirmary, with recommendations for certain changes.

On motion of Dr. Kahle, the report was approved and the committee discharged.

Drs. Kahle and Probst, committee, presented a report on sewage disposal at Fostoria. On motion of Dr. Hoover, the report was adopted.

Drs. Wise and Probst, committee, presented a report on the proposed extension of the Berlin cemetery, Holmes county. On motion of Dr. Hoover, the report and recommendations were adopted.

Dr. Hoover moved that a special order of the Board be made as follows:

To the trustees of Berlin township, Holmes county, Ohio: It is hereby ordered by the State Board of Health that on and after July 1, 1893, no interments shall be made south or east of the present boundary of Berlin cemetery. A yea and nay vote being taken, resulted in four votes in the affirmative and none in the negative.

Dr. Hoover moved that a bacteriological examination of Fostoria's water supply be made. The motion was carried. Dr. Kahle moved that a committee, acting with the secretary, be appointed to report on the probable cost of issuing a pamphlet on the "Powers and Duties of Boards of Health." The motion was adopted. The president appointed Dr. Hoover and the secretary as members of this committee.

Drs. Wise and Probst, committee, presented a report of an investigation of the Medina county infirmary. On motion of Dr. Stanton, the report and recommendations were adopted and approved.

The secretary was instructed to send a copy of the report to the commissioners of Medina county, and inform them of the action of the Board.

Prof. Nelson and Dr. Probst, committee, presented a report on an investigation of an alleged unisance arising from flooded lands in and adjoining Newark. On motion of Dr. Stanton, the report was received, and the suggestions of the committee approved.

Dr. Hoover, committee, presented a report on the water supply of Piqua, and requested that the secretary be added to the committee and further time granted for investigation. On motion of Dr. Kahle, the report was received, the secretary was added to the committee, and further time given for investigation.

Prof. Nelson and Dr. Conklin, committee, presented a report on the water supply of Bucyrus. On motion of Dr. Hoover, the report was received, and the recommendations of the committee approved.

The secretary presented a report by Dr. J. H. Calvin, health officer of Huron, on an epidemic of typhoid fever at that place. On motion of Dr. Hoover, the report was received, and the secretary was instructed to use such parts of it in connection with his own report on the epidemic as he might deem advisable.

Dr. Kahle, committee, presented a report of an investigation of a slaughter house nuisance at Marion. On motion, the report was received.

A petition from residents of Ripley, and a communication from the Ripley board of health, with reference to an alleged nuisance at that place, were presented by the secretary. The president appointed Dr. Stanton a committee to investigate and take such action as he deemed necessary.

The secretary presented reports in regard to the prevalence of diphtheria at Wyoming and Lockland. The president appointed Dr. Stanton and the secretary a committee to investigate and act as might be deemed necessary.

A communication from Dr. Graham, with reference to the unsanitary condition of the New Lisbon jail, was presented by the secretary. The president appointed Dr. Stanton a committee to investigate the complaint.

The secretary presented a communication from Dr. C. A. L. Reed, Secretary-General of the Pan-American Medical Congress, to the Governor, requesting him to appoint delegates to the Congress. The communication was referred by the Governor to the Board with the request that nominations for delegates be furnished him.

On motion, a recess was taken.

#### SECOND SESSION-2 P. M.

Present as before.

Dr. Stanton moved that the president appoint three delegates to attend the Pan-American Medical Congress. Carried. Dr. Kahle moved that the president appoint two delegates to attend the American Public Health Association in Chicago, the president to be an additional delegate. Carried.

The secretary presented the request of Mrs. Kate Wilcox to remove the remains of her child from the cemetery at the O. S. & S. O. Home at Xenia, to Green Lawn cemetery at Columbus, cause of death having been diphtheria. On motion of Dr. Stanton, seconded by Dr. Hoover, the request was refused. Dr. Stanton, with the consent of his second, withdrew his motion. Dr. Stanton moved that further action be deferred until the next regular meeting of the Board. The motion was carried.

Drs. Stanton and Hoover presented the following report:

Mr. President: Your committee, to whom was referred the complaint of the Akron Board of Health against the action of the Canton authorities, alleging that a case of small-pox had been unjustly and without notice sent to their town, beg leave to report that they have dury considered the evidence in the premises, and are of the opinion that the Canton Board of Health did not use judicious precautious in the matter of notifying the Akron authorities.

• We further desire to state that the relation of Dr. Conklin in this case was as a member of the Cauton Board of Health and not as a member or by the authority of this board.

(Signed)

THOS. C. HOOVER,
BYRON STANTON,
Committee.

On motion, the report was adopted and the committee discharged. The secretary was instructed to furnish a copy of this report to the Akron Board of Health.

Dr. Stanton and the secretary, committee, presented a report on the rules and regulations of the State Board of Health. On motion of Dr. Kahle, the rules and regulations were taken up section by section. Rules 1 to 29, inclusive, were separately read and adopted, as follows:

#### RULES AND REGULATIONS

OF THE

#### OHIO STATE BOARD OF HEALTH.

ADOPTED JUNE 30TH, 1893.

#### CONTAGIOUS DISEASES.

Rule 1. No person suffering from diphtheria, scarlet fever, small-pox, measles, whooping cough or other dangerous communicable disease shall be admitted into any public, parochial or private school or college or Sunday school, or shall enter any assemblage, or railway car, street car, vessel or steamer, or other public conveyance.

RULE 2. No person shall be admitted into any public, parochial or private school or college, or Sunday school from any house or building in which has recently occurred a case of dangerous communicable disease, without first presenting a certificate signed by a reputable physician, that all danger of communicating such disease is past, and said certificate is indorsed by the board of health or its proper officer, within whose jurisdiction the person may reside or be.

RULE 3. No parent, guardian or other person having charge or control of any child or children, shall allow or permit any such child or children to go from any house or building in which a case of small-pox, diphtheria, scarlet fever, measles, typhus fever or cholera has recently occurred, without a permit from the board of health or its proper officer.

Rule 4. It shall be the duty of every physician called to attend a person sick, or suspected to be sick, with cholera, yellow fever, small-pox, diphtheria, scarlet fever, measles, whooping cough, typhoid fever or typhus fever, within twelve hours thereafter, to report the name and residence of such person to the board of health or its proper officer, within whose jurisdiction such person is found; and where a person is taken sick with any of the above named diseases, and a physician is not called, it shall in a like manner be the duty of the owner or agent of the owner of the building in which such person resides, lives or is staying, and of the head of the family in which such disease occurs, to report the name and residence of the patient to the board of health or its proper officer.

RULE 5. It shall be the duty of the board of health, or its proper officer, when a case of small-pox, yellow fever, typhus fever diphtheria, scarlet fever or measles is reported within its jurisdiction, to at once place or cause to be placed in a conspicuous position on the house wherein any of the aforesaid diseases occurs, a quarantine card or flag, and a notice announcing in large letters, "CONTAGIOUS DISEASE WITHIN," and to prohibit entrance to or exit from such house without the written permission of the board of health.

RULE 6. Every physician attending a person affected with small-pox, diphtheria, scarlet fever or typhus fever, shall use every possible precaution to prevent communication of the disease to others.

RULE 7. Any house or building, and its contents, in which a case of small-pox, cholera, yellow fever, typhus fever, diphtheria, scarlet fever or measles has occurred, shall be disinfected by the owner or occupant, under the supervision of the board of health or its proper officer, in the manner recommended by the State Board of Health in its circular on "Disinfection and Disinfectants."

RULE 8. The isolation of patients and duration of quarantine in infectious diseases shall be as follows:

DIPHTHERIA.—For the patient: Isolation for fourteen (14) days after recovery and disinfection of premises. For persons associated with, or in the house with the patient: Quarantine until after death or recovery of the patient and disinfection of the premises.

SCARLET FEVER.—Isolation of the patient and quarantine of children associated with or in the house with the patient for ten (10) days after complete desquamation or scaling of patient and disinfection of the premises.

SMALL-POX.—For the patient: Isolation until after all crusts or scales have fallen off and the disinfection of the premises. For exposed persons: Quarantine for fourteen (I4) days from date of last exposure.

CHOLERA AND YELLOW FEVER.—For the patient: Isolation until after complete recovery and disinfection of the premises. For exposed persons: Quarantine for five days from date of last exposure.

Typhus Fever.—For the patient: Isolation until after complete recovery and disinfection of the premises—For exposed persons: Quarantine for twenty-one (21) days from date of last exposure.

RULE 9. The bodies of persons who have died of small-pox, cholera, yellow fever, typhus fever, diphtheria, scarlet fever, puerperal fever, erysipelas, measles or other contagious or infectious diseases, shall be wrapped in a sheet saturated with a solution of bichloride of mercury—one ounce to the gallon of water—and shall be buried within twenty-four hours after death, except by written permission of the board of health.

RULE 10. No public or church funeral shall be held in connection with the burial of a person who has died of cholera, small-pox, yellow fever, typhus fever, diphtheria, scirlet fever, measles or whooping cough, and the body of such person shall not be taken into any church, chapel or other public place.

RULE 11. School books or books from a public or circulating library shall not be taken into any house where small-pox, typhus fever, diphtheria, scarlet fever, measles or whooping cough exists. And if school books or library books have already been taken into such house, they must be destroyed by the owner or library authorities, or be properly disinfected before they are again taken to school or placed in circulation.

#### TRANSPORTATION OF DEAD BODIES.

RULE 12. The transportation of bodies of persons dead of small-pox, diphtheria, Asiatic cholera, typhus fever or yellow fever, except for burial or cremation within the jurisdiction of the health authorities of the municipality or township in which the death has occurred, is absolutely forbidden.

Rule 13. The bodies of those who have died of anthrax, scarlet fever, puerperal fever, crysipelas, measles and other contagious, infectious or communicable diseases, must be wrapped in a sheet thoroughly saturated with a strong solution of bichloride of mercury, in the proportion of one ounce of bichloride of mercury to a gallon of water; and incased in an air-tight zine, tin, copper or lead-lined coffin, or in an air-tight iron casket hermetically sealed, and all inclosed in a strong, tight wooden box; or the body must be prepared for shipment by being wrapped in a sheet and disinfected by a solution of bichloride of mercury, as above and placed in a strong

coffin or casket, and said coffin or casket incased in a hermetically sealed (soldered) zinc, copper or tin case, and all inclosed in a strong outside wooden box, of material not less than one inch and a half thick.

Rule 14. In case of contagions, infectious or communicable diseases, the body must not be accompanied by persons who or articles which have been exposed to the infection of the disease, without a permit and certificate of proper disinfection, from the local health authorities. And in addition to permit from board of health or proper health authority, which shall not be granted without satisfactory evidence of Rule 13 having been complied with, agents will require an affidavit from the shipping undertaker, certified to by the proper health authority, stating how body has been prepared and kind of coffin or casket used, which must be in conformity with Rule 13.

Rule 15. The bodies of persons dead of diseases that are not contagious, infections or communicable, may be received for transportation to local points in the same state, when incased in a sound coffin or metallic case, and inclosed in a strong wooden box, securely fastened so that it may be safely handled. But when it is proposed to transport them out of the state (unless the time required for transportation from the initial point to destination does not exceed 18 hours), they must be incased in an air-tight zinc, copper tin, or lead-lined coffin or an air-tight iron casket, or a strong coffin or casket incased in a hermetically sealed (soldered) zinc, copper or tin case, and all inclosed in a strong outside wooden box, of material not less than one inch thick. In all cases the outside box must be provided with four iron chest handles.

Rule 16. Every dead body must be accompanied by a transit permit from board of health or proper health authority, giving permission for the removal, and showing name of deceased, age, place of death, cause of death, the point to which it is to be shipped, medical attendant, and name of undertaker.

Rule 17. The box containing corpse must be plainly marked with paster showing name of deceased, place of death, cause of death, the point to which it is to be shipped, and number of transit permit issued in connection therewith.

Rule 18. It is intended that no dead body shall be moved which may be the means of spreading disease; therefore, all disinterred bodies dead from any disease or cause will be treated as infectious and dangerous to the public health, and will not be accepted for transportation unless said removal has been approved by the State Board of Health, and the consent of the health authority of the locality to which the corpse is consigned, has been first obtained, and the disinterred remains inclosed in a hermetically sealed (soldered) zinc, tin or copper-lined coffin or box, or box incased in a hermetically sealed (soldered) zinc, tin or copper case.

#### QUARANTINE.

Rule 19. No common carrier, or other person, shall bring into the state of Ohio, any person sick, or suspected to be sick, with Asiatic cholera, small-pox, yellow fever, typhus fever, diphtheria, scarlet fever, or any other dangerous, contagious or infectious disease.

Rule 20. When any railway car, steamboat, sailing vessel or other conveyance coming from a place or locality declared by the State Board of Health to be infected with cholera, small-pox, typhus fever or yellow fever, or having on board any person or persons affected with any of the above named diseases enters any port or p ace in the state of Ohio, such railway car, steamboat, lake vessel or other conveyance, and the crew, officers, passengers, baggage, merchandise and freight, shall be subject to such inspection and disinfection as may be ordered by the State Board of Health.

RULE 21. If any person is found on any railway car, steamboat, lake vessel, or other conveyance, who is sick with any of the diseases named in Rule 20, he or she

shall be removed by the health authorities within whose jurisdiction such person is found, and isolated and properly cared for until the termination of the disease. And the necessary expense of such isolation and care, if the person so removed is unable to pay the same, shall be a valid claim against and be refunded by the owners, agents or assignees of the railway car, steamboat, lake vessel, or other conveyance from which such person or persons were removed.

RULE 22. In case of small-pox, all persons reasonably suspected of having been exposed thereto shall be removed from such railway car, steamboat, lake vessel, or other conveyance, and be isolated for fourteen (14) days from last exposure. In case of typhus fever, all persons reasonably suspected of having been exposed thereto shall be removed, and isolated for twenty-one (21) days from last exposure. In case of cholera or yellow fever, all persons reasonably suspected of having been exposed thereto shall be removed and isolated for five (5) days from last exposure. The clothing of persons so removed and all baggage, luggage, freight or merchandise found on any railway car, steamboat, lake vessel, or other conveyance, on which there is any person or persons sick with cholera, small-pox, typhus fever or yellow fever, and reasonably suspected of having been infected shall be disinfected or destroyed, and such railway car, steamboat, lake vessel, or other conveyance, shall be disinfected, as required by the board of health.

RULE 23. When deemed necessary by the State Board of Health to prevent the spread of cholera, and after ten (10) days' notice, each and every railway ear, steamboat and lake vessel in, or coming into the state of Ohio, and used for the transportation of passengers shall be provided with means satisfactory to said board, for disinfecting the excreta of passengers and crews.

RULE 24. It shall be the duty of the conductor of any railway train, and of the master of any lake vessel or river vessel to immediately notify by telegram the Secretary of the State Board of Health, at Columbus, of any case, or suspected case of cholera, small-pox, yellow fever or typhus fever occurring on board such train or vessel within the limits of the state of Ohio.

RULE 25. It shall be the duty of the board of health, or other health authority of any city, village or township, to at once furnish the State Board of Health with a true copy of any quarantine orders or regulations adopted by said board of health, or health authority, as against any foreign country or state, or any municipality or township within the state of Ohio.

#### REPORTS.

RULE 26. It shall be the duty of the health officer of every municipal board of health to furnish each week to the State Board of Health, a report of all cases of diphtheria, scarlet fever, cholera, typhus fever, yellow fever, typhoid fever, small-pox or measles occurring within his jurisdiction, and to telegraph the Secretary of the State Board of Health at Columbus, as soon as notified of the existence of a case of cases of small-pox, cholera, yellow fever or typhus fever within his jurisdiction.

RULE 27. It shall be the duty of each municipal board of health to furnish to the State Board of Health on or before the 15th day of each and every month a report of all deaths with the causes thereof, occurring within the limits of the municipality, during the next preceding calendar month.

RULE 28. It shall be the duty of the superintendent of any state institution, and of the superintendent of any county children's home or county infirmary in the state of Ohio, to at once report to the State Board of Health any case of small-pox, cholera, yellow fever, typhus fever, typhoid fever, diphther a, scarlet fever, measles or other contagious or infectious disease occurring in such institution or home, and to furnish the said board on or before the 15th day of each and every mouth a report

of the deaths and the causes thereof, occurring therein during the next preceding calendar month.

RULE 29. It shall be the duty of all local boards of health, health authorities and officials, officers of state institutions, police officers, sheriffs, constables, and all other officers and employes of the state or any county, city or village thereof, to enforce the foregoing orders and regulations.

Dr. Kahle moved and Dr. Hoover seconded that the rules and regulations, as read and amended, be adopted as a whole. A yea and nay vote being taken resulted in four affirmatives and no negatives. The secretary was instructed to consult the Attorney-General in regard to the legal publication of the rules and regulations.

Dr. Stanton presented the following resolution, notice of which was given at the April meeting:

Resolved, That the by-laws be so amended as to provide that a vice president shall be elected annually at the time of electing the president, said vice president to act as president in the absence or disability of the president.

On motion, the resolution was adopted. On motion, the by-laws were ordered changed as provided for in the foregoing resolution

The following resolution by Prof. Nelson, offered at the preceding meeting, was read:

Resolved. That the secretary of the State Board of Health shall have authority, in any great emergency, to call a meeting of the Board; provided, that the emergency is such that time will not permit consultation with the president.

On motion of Prof. Nelson, the resolution was adopted.

On motion of Dr. Kahle, it was voted to proceed with the election of officers. Dr. Kahle nominated Prof. Nelson for president. On motion of Dr. Stanton, the secretary was instructed to cast a ballot for Prof. Nelson as president. The secretary reported having cast the ballot of the Board for Prof. Nelson, and he was declared elected president for the ensuing year.

Dr. Stanton nominated Dr. Hoover for vice-president. On motion of Dr. Kahle, the secretary was instructed to cast a ballot for Dr. Hoover as vice-president. The secretary reported that he had cast the ballot of the Board for Dr. Hoover, and he was declared elected vice-president for the ensuing year.

• An invitation was accepted from Mr. Scheuffler, manager of the Crystal Rock Water Company, and from Dr. Stanley, health officer of Sandusky, to visit the Crystal Rock Spring.

No further business presenting, the Board adjourned to meet at the call of the president.

#### OCTOBER MEETING.

A regular meeting of the State Board of Health was held in Columbus at the office of the secretary, October 25th and 26th, 1893.

Present: Drs. Hoover, Wise, Miller, Stanton, Kahle and Prof. Nelson. Prof. Nelson in the chair.

Mr. Gilpatrick, of Granville, addressed the Board on the subject of sewage disposal in that village, and requested aid in solving the question. Drs. Wise, Probst and Prof. Nelson were appointed a committee to visit Granville and confer with the authorities in regard to sewage disposal.

The minutes of the last meeting were read and approved. The secretary presented his quarterly report, as follows:

### SECRETARY'S QUARTERLY REPORT.

MR. PRESIDENT: I have the honor to submit the following report for the months of July, August, September and October.

I consulted the Attorney-General in regard to publishing the rules and regulations of the Board adopted at its last meeting. He gave me an opinion to the effect that the statutes made no provision for their publication, but that a spirit of fairness should lead the Board to furnish copies to all interested parties, as far as could be done.

Accordingly, the rules were printed and copies sent to all municipal and township boards of health, and to all undertakers given in the Ohio Directory for 1892-3. Copies were also sent to the general managers or general superintendents of all railroads operated in Ohio, together with a copy of the circular on cholera prepared for railroad employes. A circular letter inclosed stated that additional copies of the cholera circular would be furnished on request. Most of the railroad companies asked for circulars and several thousand were sent out.

A circular letter was sent to each township board of trustees that had failed to report the organization of a board of health, urging that this be done at once. A personal letter was sent to the mayor and council of each village failing to report a board of health, of the same general tenor.

Every effort has been made to organize local boards, and the correspondence on this subject has been most voluminous. There is at this time a board of health in each city, fifty-three in number, 451 village boards out of a total number of 597 villages, 947 township boards having been established since last May, making in all 1451 boards of health now established.

Early in August reports were received from the Indiana State Board of Health of small-pox at Muncie, and as a number of our citizens and villages are in direct communication with that city, danger of the disease entering the state seemed imminent.

The Indiana authorities guaranteed that no person would be allowed to leave Muncie without a certificate from the local health officer, vaccination, or a certificate of previous vaccination, and disinfection of baggage under the supervision of the state authorities.

August 23d, a report was received from the Galion Board of Health that two small-pox suspects from Muncie had been removed from a car

at Galion. I learned that a child on a Big Four train suffering with small-pox had gotten off at Muncie, and that two persons who were on the car with the patient had come on to Galion. The board of health learning of this, and that four car cleaners were also exposed to the disease in cleaning the car, had them all burn their clothing, and also disinfected the car.

I sent them virus to vaccinate these persons, but as it had already been four days since their exposure, advised that they be quarantined for fourteen days from date of exposure. No cases resulted at Galion.

## REPORT ON SMALL-POX AT FORT RECOVERY.

September 13th a case of small-pox was reported at Fort Recovery in Mercer county, near the Indiana line. I at once telegraphed for full information and sent virus for vaccination of exposed persons. I learned that the patient, Mr. Max, a carpenter by trade and sixty years old, had been working in Muncie and came to Ft. Recovery about September 6th or 9th. As he was reported soon after to be ill, the board of health sent a physician to examine him and on the 13th he pronounced the disease small-pox. The patient was quarantined, guards employed, and exposed persons were vaccinated. After his recovery the house was thoroughly disinfected—for which I gave instructions—and no other cases resulted.

At the request of the health authorities of Tiffin and Fremont, I made an investigation of the pollution of the Sandusky river by waste from the straw-board works at Tiffin. A full report of the investigation will be presented later.

On my return I consulted the Attorney-General as to the authority of the Board to institute proceedings to abate the nuisance; he advised that the act establishing the Board did not confer such authority, and I so notified the persons aggrieved.

September 11th, the following communication was received in regard to pollution of the St. Mary's river by the refuse from a straw-board works at St. Marys:

St. Mary's, Ohio, September 9, 1893.

DR. PROBST, Secretary Stale Board of Health:

DEAR SIR: Through the solicitation of many citizens, I write you in regard to the predicament we are in, on and along the St. Mary's river below St. Mary's, on account of the straw-board factory allowing the refuse from said factory to run into the river. A year ago this summer it killed all the fish in the stream, creating a stench that was almost unendurable, and now the stench is so great as to almost vomit a person. They have been solicited to pit their refuse but will not do so. They set the wishes of the people at defiance. The water is so foul that no kind of stock can drink it. People who live on the river have to haul water for their stock from the canal when their wells fail, as a great many have. If you would

prefer a petition presented, let me know, as every person living near the river would willingly sign it. At all events, please take some action in the premises, as the mill owners are very defiant.

Respectfully submitted, (Signed)

WILLIAM JONES, Acting Justice of the Peace.

In reply I fully communicated the past experience of the Board in this matter, and stated what had been advised by the Attorney-General with reference to the Board's authority to abate the straw-board nuisance at Tiffin. I informed the writer that the only relief would be by act of legislature, and requested him to collect testimony which could be used in securing such an act.

I would call to memory the fact that the Board, some six years ago, collected evidence, showing the injurious effects of permitting the waste from straw-board works to enter small streams, and that such evidence was placed in the hands of Dr. Lyman, then member of the House from Medina county. Dr. Lyman introduced a bill to prohibit wastes from straw-board works being emptied into streams, but the bill was defeated.

Two years ago Mr. Flumerfelt, member of the House from Seneca county, introduced a bill in the House of a similar character. The bill passed the House, but in the Senate was referred to the committee on Manufactures and never reappeared.

In my judgment, these bills proposed too stringent measures, virtually compelling the abandonment of the straw-board industry in the state. I believe it might be possible to secure a law compelling straw-board works to purify their waste before turning it into the streams, and think this Board should interest itself in having such a law enacted.

Several years ago a series of settling basins were constructed at the Portage Straw-board Works near Akron. A year later Mr. Barbour, of Akron, president of the straw-board syndicate, informed me that the plan promised to be a complete success. The waste was run successively through these settling pits, and Mr. Barbour said he thought the pulp saved in one year would pay for the cost of their construction.

I believe the nuisance would be entirely abated if all, or nearly all, of the waste pulp could be kept out of the streams.

It might not be amiss for the Board to make some experiments in this direction, and also to prove, if possible, the cause of the destruction of fish in streams receiving the waste from straw-board works.

During the past quarter I have been more than usually occupied in personally answering ealls for aid by local health authorities.

As special matters I have to present:

- (a) Report on the sanitary condition of Galion.
- (b) Report on the pollution of the Sandusky river by waste from a straw-board works at Tiffin.
  - (c) Report on scarlet fever at Athens.

- (d) Report on typhoid fever at Rising Sun.
- (e) Report on scarlet fever at Somerset.
- (f) Report on typhoid fever at North Lewisburg.
- (g) Report on the abatement of a nuisance at Coshocton.
- (h) Report on an alleged violation of health rules at Marion.
- (i) Report on diphtheria at Bloomdale.
- (*j*) Report on ventilation of school house at Carey.
- (k) Report on pollution of county ditch at Salem.
- (1) Report on small-pox in German township, Darke county.

C. O. PROBST, Secretary.

The report was approved.

Dr. Stanton submitted reports on:

- (a) An alleged nuisance at Ripley.
- (b) An alleged nuisance at Elmwood Place.
- (c) Unsanitary condition of Columbiana county jail.
- (d) Diphtheria at Lockland and Wyoming.

On motion of Dr. Miller, the reports were received and ordered made a part of the annual report.

On motion of Dr. Miller, the secretary was instructed to give a copy of the report on the Columbiana county jail to the press, and send a copy to the commissioners of Columbiana county.

Prof. Nelson and the secretary reported on the establishment of a board of health at Vinton. The report was adopted.

Drs. Hoover, Kahle and Probst reported on approval of plans for temporary water supply and sewerage of the Epileptic hospital. The report was adopted.

Prof. Nelson and Dr. Probst, committee, reported on the proposed extension of a cemetery at Berlin. The report was adopted.

Dr. Hoover, committee, reported on the chemical examination of the water supply of Piqua. The report was adopted.

Prof. Nelson reported on plans for new sewerage for the Girls' Industrial Home.

Prof. Nelson reported on the filtration of the water supply of Upper Sandusky. On motion of Dr. Stanton, the report was received and the committee continued.

Adjourned.

Second Session, 9 A. M., October 26th.

Present as before.

On motion of Dr. Wise, it was voted to request the coöperation of the Fish and Game Commission in determining the cause of death of fish in streams polluted by waste from straw-board works. On motion of Dr. Kahle, it was voted to appoint a committee consisting of the secretary and two members to consider the whole question of pollution of streams by waste from straw-board works. The president appointed the following members: Drs. Kahle, Probst and Prof. Nelson. Dr. Wise moved and it was voted to appoint a committee to investigate the pollution of Fremont's water supply. Drs. Miller, Stanton and Probst were appointed on this committee.

On motion of Dr. Miller, the secretary was instructed to send copies of his report on the pollution of the county ditch at Salem, to the commissioners of Columbiana county, and to the board of health at Salem.

On motion of Dr. Stanton, the secretary was instructed to request the Salem Board of Health to investigate the report that abandonded wells were being used for privy purposes, and to state that such practice was condemned by the State Board of Health.

The secretary read a clipping from an Ashtabula paper, in which it was stated that eight cases of diphtheria with four deaths had recently occurred in Harbor, the sixth ward of Ashtabula. It was further stated that public funerals were being held in cases where diphtheria had caused death. On motion of Dr. Stanton, a committee was appointed to visit Ashtabula and investigate. The president appointed Dr. Miller on this committee.

The president appointed the following standing committees for 1893-4:

Hygiene of Public Institutions—B. Stanton, Chairman, C. O. Probst, E. T. Nelson.

Epidemic and Endemic Diseases and Quarantine -W. T. Miller, Chairman, B. Stanton, C. O. Probst.

Hygiene of Railways and Occupations—T. C. Hoover, Chairman, S. P. Wise, R. D. Kahle.

Hygiene of Schools—Josiah Hartzell, Chairman, W. T. Miller, E. T. Nelson.

Adulteration of Foods, Drinks and Drugs—S. P. Wise, Chairman, R. D. Kahle, T. C. Hoover.

Vital Statistics—C. O. Probst, Chairman, S. P. Wise, Josiah Hartzell. Especial Sources of Danger to Life and Limb—R. D. Kahle, Chairman, S. P. Wise, Josiah Hartzell.

Water Sources, Sewerage and Drainage-E. T. Nelson, Chairman, B. Stanton, C. O. Probst.

Diseases of Animals—S. P. Wise, Chairman, W. T. Miller, T. C. Hoover.

Finance—T. C. Hoover, Chairman, W. T. Miller R. D. Kahle.

Drs. Stanton, Hoover and Probst reported on the cost of issuing a pamphlet on the Powers and Duties of Boards of Health. The committee was continued.

On motion of Dr. Miller, it was voted to hold a joint meeting of the State and Local Boards of Health in January, 1894, program to be left to the president and secretary.

On motion of Dr. Hoover, it was voted to suspend the publication of the Weekly Bulletin.

On motion of Prof. Nelson, Drs. Hoover and Probst were appointed a committee to report at the next meeting on the cost of securing suitable office rooms outside the state house.

On motion of Dr. Kahle, the committee on Vaccine Farm was instructed to report at the next meeting the probable cost of establishing a tarm at the Ohio State University, and authorized to visit established vaccine farms if necessary.

On motion of Dr. Miller, the request to remove the body of the child of Mrs. Wilcox from the cemetery at the Ohio Soldiers' and Sailors' Orphans' Home at Xenia to Green Lawn cemetery at Columbus, death having been caused by diphtheria, was refused.

Dr. Miller offered the following rule and moved its adoption: Rule 11a. No child shall be permitted to attend any public, private or parochial school without presenting satisfactory evidence of having been successfully vaccinated. A yea and nay vote being taken, resulted in five votes in the affirmative and none in the negative.

The secretary presented his annual report, which was approved.

An opinion from Mr. Hunter, of Warren, was read in reference to the jurisdiction of justices of the peace in prosecutions for violations of orders of a board of health.

No further business presenting, the Board adjourned.

## Special Reports.

#### 1. Contagious Diseases.

- (a) What Ohio is doing to prevent the introduction and spread of cholera.
- (b) Diphtheria at Bloomdale.
- (c) Diphtheria at Carey.
- (d) Diphtheria at Glouster.
- (e) Diphtheria at Wyoming and Lockland.
- (f) Alleged violation of quarantine regulations at Marion.
- (g) Scarlet fever at Athens.
- (h) Scarlet fever at Somerset.
- (i) Small-pox at Canton.
- (j) Small-pox in German township, Darke county.
- (k) Small-pox at Norwood.
- (1) Typhoid fever at Huron.
- (m) Typhoid fever at North Lewisburg.
- (n) Typhoid fever at Orrville.
- (o) Typhoid fever at Rising Sun.

#### 2. WATER SUPPLIES AND SEWERAGE.

- (a) Water supply of Bucyrus and Upper Sandusky.
- (b) Water supply of Lima.
- (c) Water supply of Piqua.
- (d) Pollution of Sandusky river.
- (c) Garbage disposal at Detroit.
- (f) Sewage disposal at Fostoria.
- (g) Sewerage and water supply of Epileptic Hospital,
- (h) Sewerage of Spencerville.
- (i) Sewage disposal at Warren County Infirmary.

#### 3. NUISANCES.

- (a) Extension of cemetery at Belleville.
- (b) Extension of cemetery at Berlin.
- (c) Nuisance at Coshocton.
- (d) Nuisance at Elmwood Place.
- (c) Sanitary condition of Galion.
- (f) Sanitary condition of Kenyon Military Academy.
- (g) Slaughter houses at Marion.
- (h) Nuisance at Newark.
- (i) Nuisance at Ripley.
- (j) Nuisance at Salem.

#### 4. SANITARY CONDITION OF PUBLIC INSTITUTIONS.

- (a) The Columbiana county infirmary.
- (b) The Columbiana county jail.
- (c) The Medina county infirmary.
- 4 S. B. H.

# WHAT OHIO IS DOING TO PREVENT THE INTRODUCTION AND SPREAD OF CHOLERA.

By C. O. PROBST, M. D.

[Read before the Cholera Conference held at Ann Arbor, June 15 and 16, 1893.]

Mr. President and Gentlemen: I was honored with a request to present a paper at this meeting on cholera, or rather on what Ohio is doing to prevent the introduction and spread of this pestilential disease.

I may say in the beginning that the State Board of Health of Ohio fully realizes the gravity of the present situation, and feels the responsibility of the sacred trust placed in its hands of guarding the safety of over four millions of people.

In the prevention of cholera we have adopted the principle that each community in the state, in as far as it can, should take care of itself, and that the first duty of the State Board of Health is to point out to the proper authorities of cities and villages the best measures to be taken to resist an epidemic. Observing the success of the English government in the prevention of this disease by enforcing well known sanitary measures which may be summed up in one word, "cleanliness," we have endeavored to impress our municipalities with the fact that they themselves will be largely responsible if cholera should prevail to any great extent within their boundaries. That given a city with a pure water supply, properly guarded against contamination by cholera dejecta, with streets, alleys and yards freed from accumulations of decomposing filth, and with protection against fecal contamination of the soil by means of abominable privy pits, such a city may defy an invasion of cholera—which at the worst would give rise to but a small number of sporadic cases.

The campaign against "cholera breeding filth," as it has been aptly called, and against polluted water supplies, was commenced nearly a year ago when the outbreak in Hamburg alarmed the civilized world, and has been continued to the present time; and not only were the health authorities urged to action, but our entire people, through the public press and by circulars widely distributed, were induced to make unusual efforts for a thorough "cleaning up," and were at the same time made familiar with those personal precautions by which cholera, to a great extent, may be avoided. The warnings of last year have been again repeated this spring, and while the continued rains and floods have delayed sanitary work, this has been offset in part by the benefits accruing from the thorough flushing of sewers and washing of streets and alleys.

But while much of this effective work was done last year, much was left undone on account of defective laws and insufficient funds. Boards of health existed only in cities and in villages of five hundred or more inhabitants. The rate of taxation being fixed, the meager appropriations for sanitary purposes could not be ncreased, so that the good work was stopped for lack of means. The State Board of Health appealed to the General Assembly, representing that while we had fully informed numicipal health authorities of their duties, they required additional powers and financial support to properly perform them. The legislature promptly and generously responded to our demands. Instead of limiting boards of health to cities and villages of a certain size, each and every municipality and township in the state now has provisions for such an organization, giving us in all 2,058 local boards of health. The law is mandatory, and if a community fails to comply with its provisions, the State Board may step in and do what has been left undone, and at the expense of the neglectful community.

The quarantine laws have also been greatly strengthened, and the State Board of Health has been given supreme authority in all quarantine matters. This I consider an essential measure. While an epidemic of cholera is to be greatly feared, an epidemic of shot gun quarantine, as witnessed in the south during yellow

fever, is to be deprecated, and it seemed highly desirable that the control of this matter should be vested in a central authority.

The nuisance laws were supplemented and amended in many particulars. Boards of health now have authority to abate one of the greatest evils from which we suffer—the underground privy-pit; many cities and towns have already done so, and others are rapidly following suit.

By virtue of an act secured by the State Board of Health any city, village or township may now issue bonds and borrow money to be used in carrying out measures to prepare for cholera or to prevent its introduction or spread. These bonds may be issued in any amount, and if necessary may be sold at private sale without advertising, so that the money may be immediately available. While the State Board has no emergency fund, we have in our state an Emergency Board that can authorize the creation of a deficiency, so that we can have at our disposal in case of cholera any sum of money we may need.

In January of this year a joint meeting of the state and local boards of health was held in our capital city, which was devoted to the discussion of cholera and its prevention. The meeting was largely attended and was productive of much good.

We have just issued detailed instructions to boards of health for dealing with cholera, whether occurring as isolated cases or as an epidemic, with plans for organizing corps for the hospital care of the sick, for their removal by ambulance, for the disinfection of houses, the burial of the dead, and other duties required in the successful handling of a cholera epidemic.

The transportation companies, which are so largely instrumental in introducing cholera, have been induced to co-operate with the State Board, and several meetings have been held with their representatives. The measures recommended by the State Board to be taken to prevent the introduction of cholera, and for the personal safety of their employes, were printed and distributed through proper channels to all the servants of such companies.

Internal sanitation must rest with the local authorities, and the State Board of Health can only urge the importance of such measures and point out the way for their fulfillment.

If it were possible to so prepare the soil that the seeds of cholera would find nowhere in our state a growing place, quarantine measures might be confined to the isolation of imported cases; but in many places in Ohio, and I presume the same is true of other states, the conditions are such that if cholera were introduced it would almost certainly become widely spread. Cities with public water supplies polluted with sewage cannot afford to open their doors to cholera, and the question of state quarantine has received the serious consideration of our Board.

Last season the State Board instituted a quarantine inspection which was continued during parts of September and October. All trunk line railroads from the Atlantic seaboard entering our state were inspected at state lines. Sites for quarantine camps, ten in all, adjacent to these railroads, were selected, where cholera patients or "suspects" could be detained for treatment and observation. These cholera camps were not actually fitted up, and nothing was done except to inspect the passengers and crews of all trains; but all arrangements were made, with the help of the Ohio National Guard, so that a complete camping ontfit for one hundred persons, with a military guar 1, could be sent to any or all camps within twenty-four hours after notification. Cholera patients or "suspects" in the meantime were to be detained in the car in which they were found; and immigrants were allowed to come into the state in separate cars only. Arrangements were made to inspect all European immigrants coming from Canada by vessel. At the ports of Cleveland, Sandusky, Toledo and Ashtabula vessels were not permitted to land passengers or baggage until after inspection.

The machinery for quarantine inspection which was placed in order last fall, can be put in operation again this year, should this become necessary. We are now

waiting to see what action the National government will take in the matter of internal quarantine. I have been informed within a day or two, that plans for establishing inland inspection of immigrants on trains and at points of distribution, have been prepared, and that a schedule for this purpose will soon be issued by the Marine Hospital Service. At a meeting of our Board held last April the plan for quarantine inspection of immigrants proposed by the sanitary council of the Mississippi Valley was approved, viz.: for a continuous inspection of immigrants to their ultimate destination in the states. If some plan is adopted by the National authorities it is probable that no quarantine measures will be enforced by the Ohio Board unless cholera should become epidemic in some part of this continent; in that event the nature of the event will determine its action.

Believing that cholera, at least epidemic cholera, is caused in the great majority of cases by using polluted water supplies, we have used every effort to remove as far as can be, the possibilities of such pollution. The Board has inspected the water supplies of a number of our principal cities, and secured the co-operation of the local authorities in effecting n eded improvements. The water-works boards of all cities having public supplies were reminded of the law which gives them control of all sources of water pollution within ten miles distance from water-works, and of their duty to inspect and remove all possible sources of contamination.

If cholera appears in America, I anticipate false reports of cholera from many parts of our state, resulting in great public alarm. Every year during the hot months sudden deaths from cholera nostra or from other gastro-intestinal irritation, occur in many of our towns which might easily be mistaken for Cholera Asiatica in the presence of that disease. Our Board has therefore arranged with bacteriologists in Cincinnati, Columbus and Cleveland, who will be prepared with a field outfit and hold themselves in readiness to go at once to any place reporting a case or suspected case of cholera; and our physicians and health authorities have been instructed to treat every suspected case as actual cholera until a bacteriological examination can be made to determine the diagnosis.

These are broadly the outlines of the measures taken by the Ohio State Board of Health to prevent the introduction and spread of cholera. Our municipal health authorities are fully alive to the needs of the present danger, and much good work has been and is being done by them. I think I may safely say that Ohio was never in better condition to resist an invasion of cholera; and while we view with alarm the continued prevalence of the disease abroad, we hope to be able to control its ravages should it be carried within our borders.

In conclusion, I desire to express the hope that when the emergency comes we may be able to join our forces with those of neighboring states in fighting off this dread scourge of mankind.

I present herewith copies of circulars on cholera, issued by the State Board of Health.

#### REPORT ON DIPHTHERIA AT BLOOMDALE.

#### BY THE SECRETARY.

An urgent appeal was received from the board of health of Bloomdale to visit that village and assist the board in controlling diphtheria, which had prevailed there for some time. It was represented that the board was not legally organized and that it was impossible to enforce necessary quarantine regulations.

I visited Bloomdale September 30th, and met the board of health and a number of interested citizens.

Bloomdale is a village of 509 inhabitants, on the B. & O. Ry., seven miles west of Fostoria. Diphtheria has prevailed there for the last year and a half; there having been twenty-one cases and three deaths since February, 1893.

A board of health was duly appointed and one of its members was elected health officer and another clerk. On receiving a copy of the opinion of the Attorney-General that members of a board of health could not serve as health officer or clerk these two officers resigned as members of the board and were then re-appointed as health officer and clerk. There were but three members present at this meeting, and there was a doubt as to the legality of the appointments. The mayor had not properly supported the board. He had also been absent from the village for six weeks prior to my visit, and was not expected home for some time, the village being without a head. The mayor had neglected or recused to call meetings of the board, and for these reasons, and from timudity, the rules and orders of the board had been set at naught. Houses containing cases of diphtheria had been placarded, but the immates had paid but little attention to quarantine. One house in which several cases of diphtheria had occurred had never been disinfected, and several cases seemed traceable to this house.

I pointed out that the legislature had made the board of health independent of both mayor and council. That the law required the board to elect a president protem, who, in the absence of the mayor, had all the authority of the president of the board. That three members could call a special meeting of the board independent of the mayor, and that prosecutions could be brought before any justice of the peace in the country. I decided that their health officer and clerk had not been legally appointed.

A reorganization was effected by electing one of their members president protein, and by reelecting the health offcer and clerk, six members of the board being present.

School was to be opened on the following Monday, and I advised that the superintendent of schools be notified to refuse admission to any person coming from the three houses which at that time contained cases of diphtheria. Also that the house supposed to be still infected, to which reference has been made, be ordered disinfected under the supervision of the health officer. The rules of the State Board of Health regarding measures to prevent spread of contagious diseases, were read, and the board notified that they would be required to enforce these rules. Copies of our circular on prevention of diphtheria were left with the board for distribution and they were urged to use unusual efforts to stamp out the disease.

The board is composed of representative citizens, and the members agreed to strictly enforce all necessary measures to rid the village of contagious diseases. Three interesting questions were propounded at this meeting:

1st. In the absence of the mayor can anyone be delegated to act in his stead? I informed the board that the council had authority to appoint a person to act for the mayor by virtue of section 1754, R. S.

- 2d. Can council remove members of the board of health without cause? I was unable to answer this question, but have since consulted the Attorney-General, who is of the opinion that council has such power.
- 3d. Can the sanitary policeman or health officer arrest without a warrant any person found in the act of violating a rule of the board of realth? This question was answered in the affirmative.

#### REPORT ON DIPHTHERIA AT CAREY.

#### BY THE SECRETARY.

While in Salem a telegram was forwarded from the board of health of Carey requesting me to come there at once on account of an outbreak of diphtheria. I reached there via Upper Sandusky, on the morning of October 6th. I called on the secretary of the board of health and was a little surprised to learn that but one case of diphtheria had occurred. This was a child who had sickened in school on Friday and died the following Tuesday. As they had had twenty-one deaths from the dis-

ease the preceding year, the people were much alarmed, and insisted on the local board calling on the state authorities. It was specially feared that something was wrong with the Central school building, and I was requested to examine its ventilation and water supply.

In company with a member of the board of health, the secretary of the board of education, and Dr. Farrell, who had attended the diphtheria patient, I inspected the school building. All of the rooms on the lower floor had been dismissed on account of the death from diphtheria.

The school house is a well constructed brick building located in large grounds. It is heated and ventilated by the Smead system, placed in the building at the time of its construction, some ten years ago. We first visited the dry air closets. These were in good condition, free from odor, with a strong draft down the seat holes. The fresh air rooms were clean and tidy, as was the whole basement floor. The furnaces, two in number, were heated with gas. There are two foul air shafts, and at the bottom of each was an independent gas fire, which I was told was in constant operation.

We next examined the room in which the child was taken sick. At one foul air outlet there was a back current of air. This was stopped temporarily by closing the opening under a door near the outlet. In all the rooms on this side the house, the west side, both up and down stairs the ventilation was fairly good, though currents of air would occasionally be deranged by the opening and closing of doors leading into the halls. On the other side of the house the ventilation in all the rooms was bad. In one room, the northeast room up stairs, all of the foul air openings were bringing air into the room, which was passing out through the fresh air register. This was the case when either hot or cold air was turned into the room. There was a very bad odor in this room. None of the other rooms on the east side were so bad, though in all of them foul air was coming in at some of the openings. In these rooms it would come in at intervals. Ribbons of tissue paper held at a short distance from the fresh and foul air registers showed this plainly. When air came in at the fresh air register the paper in front of it would be blown into the room, while those in front of the foul air openings would be drawn against them. Suddenly the current would be reversed as shown by the papers. There was a high wind out of doors at the time, from the northwest, and this no doubt was the cause of the trouble.

The secretary of the board of education was astonished at the demonstration, as the board had prided itself on having a perfect system of ventilation.

I advised him to write to Mr. Smead and request him to send an expert to examine into the defects found. He said he would do this at once. I requested the superintendent to make a drawing of each room, showing the direction of air currents as we found them, as an aid in locating the cause of the trouble.

I next examined the well. There was nothing to indicate any pollution.

The superintendent informed me that he had twice disinfected the room in which the child was taken sick. When asked how, he replied "by burning sulphur," and when asked how much said "nearly a pound." I directed ten pounds of sulphur to be burned in the room, which he said would be done. The health officer was away and the secretary of the board could not inform me whether the house in which the child had died had been disinfected. He promised to look after this.

#### REPORT ON DIPHTHERIA AT GLOUSTER.

BY THE SECRETARY.

To the Board of Health, Glouster, Ohio:

Gentlemen: Having been called upon to make an inspection of your village with special reference to the cause of the prevalence of diphtheria, I would respectfully offer the following for your consideration:

From the best information obtainable (no record is kept of contagious diseases) it appears that diphtheria was first introduced into your village about a year ago-A number of families were affected by the disease at that time, and five deaths resulted. During the summer of '93 a few scattering cases occurred, and recently five more deaths have been occasioned by the disease.

This loss of life demands your serious attention, for it is a well established fact that diphtheria, to a great extent, may be prevented. As your board has been appointed for the express purpose of enforcing every possible and necessary measure to prevent, spread of contagious diseases, nothing should be left undone which will tend to accomplish this.

I would first impress upon you that diphtheria is *contagious*, and it is doubtful whether a person ever contracts the disease without in some way coming in contact with a previous case, or with some article that has been about a diphtheria patient.

The rules of the State Board of Health require you to isolate every person affected with diphtheria, for two weeks after his recovery and the proper disinfection of his dwelling. They also require that no person shall come out or go into such a dwelling without the written permission of your board.

It is more than probable that had your board enforced such measures in the first case to occur, no other cases would have followed.

I learn that it is the practice, when a case of contagious disease occurs, to have the attending physician placard the house; and that when the patient has recovered he removes the card. Placarding a house is virtually establishing quarantine and removing it is raising quarantine. This no one has authority to do except the board of health or its proper officer. This practice should be changed.

It is also the custom to depend on the attending physician for the disinfection of houses which have contained a contagious disease. The physician receives no compensation for this service and is not responsible for its proper performance. Neither has he the authority to order that necessary measures for disinfection shall be taken.

It is highly important that each house in which diphtheria or other contagious disease occurs shall be properly disinfected, and your board is responsible for the work. Your health officer should personally see that disinfection is done in a right manner.

While it is probable that diphtheria has been spread in your vidage by contagion, it is doubtless true that the malignancy of the disease, resulting in so many deaths, was due to bad sanitary conditions.

I am informed that the necessity for drainage and sewerage is fully recognized, and that bonds for this purpose have been issued and the work will be begun as soon as they can be so'd. But there is a vast amount of surface filth scattered about your streets, alleys, gutters and yards that should be removed at once. Not only is this accumulation of surface filth a menace to the health of your people, but it is detrimental to the growth and financial interests of your village, bespeaking a general neglect which cannot but unfavorably impress all visitors.

The privy vaults in the village are, many of them, subject to overflow in hard rains, spreading their filthy contents over the surface. Such vaults should be condemned by your board and the owners required to protect them against surface water. As rapidly as possible old vaults should be replaced by cemented brick vaults made water tight and protected against surface drainage, or by dry earth closets above ground. The latter are cheaper; and when given proper attention, and plenty of dried pulverized earth is used, are much better than vaults.

Trusting that you will spare no effort to prevent the spread of contagious diseases, and that you will succeed in placing your village in a better sanitary condition.

I have the honor to be, very respectfully,

C. O. PROBST, Secretary.

#### REPORT ON DIPHTHERIA AT WYOMING AND LOCKLAND.

BY B. STANTON, M. D.

Gentlemen: Your committee appointed to make an investigation of the villages of Wyoming and Lockland, with reference to the cause of the prevalence of diphtheria in these places, would respectfully submit the following:

We find that there were many cases of diphtheria of which several proved fatal. Of twenty three cases reported to the health officer of Wyoming, sixteen were reported in the months of June and July and some cases occurred that were not reported. None were reported between February 20th and May 28th.

The first case reported to the health authorities of these villages this summer was that of a child named Isor, reported to Dr. J. B. King, health officer of Lockland, on May 26th, death following in fourteen days. This child, although a resident of Lockland, attended school in Wyoming and was in school at least one day after she was sick with the disease from which she died. On May 27th and June 3d, two cases were reported to Prof. Van Dyke, health officer of Wyoming. Both of these children occupied seats near the Isor child and, no doubt, contracted the discase from her. On June 11th the mother of one of these children was reported as having the disease. The next two cases occurred in Lockland in the family of Mr. Fox, the first a nurse girl, who a few days before becoming sick, had visited her home a few miles distant, where diphtheria was then prevailing. One day later the babe, whom the servant nursed, contracted the disease. The time of occurrence of these cases leads us to believe that the servant contracted the disease at her home and by her it was communicated to the babe. The physician in attendance upon the child reported the case to the health officer, but the case of the servant, who was attended by another physician, was not reported, although the doctor advised that as a matter of safety the servant should be sent away, thus showing that he believed her to be affected with a dangerous disease. Five other cases were reported in June, all in Wyoming. The source of the disease in these cases is not known to us, but we be ieve that they originated from direct contact with some of the preceding cases. The same may be said of two cases reported in Wyoming on July 6th and 8th.

On July 25 and 26 five cases were reported to Prof. Van Dyke, health officer of Wyoming, from five different families, all of the patients taking sick on Monday, July 24, after having attended a party the Friday night before, where kissing plays were indulged in. At the house where this party was given, there had been about two months before a case of sickness called by the physician in attendance, "follicular tonsilitis," but the extent of the exudation, as described to us, would indicate that the disease was undoubtedly diphtheritic; this case was not reported as one of that nature and it is not likely that such disinfection was resorted to as should have been after the occurrence of diphtheria. While we believe that these five children contracted the disease at the party, we cannot say whether it was from disease germs remaining in the house or from the throat of some one at the party having diphtheria.

On July 28 two other cases were reported, both of the persons affected having attended a lawn fete on the 24th.

About the same time two other cases occurred just outside the corporation limits of Wyoming, but these cases could be traced to exposure in the village, the children having visited at a house where diphtheria had recently prevailed.

At the time of writing this report no case of the disease has occurred in Wyoming for four weeks, and we hope it has been gotten under control.

In this connection it may be proper to state that there was a belief among some of the residents of Wyoming and Lockland that there were some local insanitary con-

ditions causing the disease to spread. Some believed that the disease was due to defective heating and ventilation of the Wyoming school-rooms. Others thought that improper connections of water-closets with storm water sewers, that were flushed only during heavy rainfalls, might be the cause.

Our investigations led us to believe that to some other cause the unusual spread of the disease must be ascribed. After a thorough inspection of the school houses, we were unable to find any defect in either the ventilation or heating of the rooms, and as evidence that the disease could not have been due to any defect in the construction or care of the school houses, we may state that after the close of the schools the disease was more prevalent than before. Up to the time of closing the schools three or four cases of diplitheria had occurred among school children. Since that time the records of the health office show that twelve cases have occurred, nearly all of them among children of school age.

In regard to improper sewer connections as a possible source of the disease we would report that but one case occurred in a house having sewer connections, and in that house the connection was indirect; there was no defect in the plumbing, and the child that became sick occupied a desk at school next to the Isor child, from whom, no doubt, the disease was contracted.

As we find no local insanitary conditions to account for the great prevalence of the disease in these villages, and as we think we were able to trace the disease in nearly all of the cases to direct communication with other cases, and as we have learned of some cases that were undoubtedly diphtheria that were not reported to the health authorities, we are of the opinion that there has been a great laxity on the part of some of the physicians in regard to the observance of the regulations provided for such cases, and neglect in regard to disinfection. We have, therefore, recommended to the health officers the more rigid enforcement of the laws in regard to isolation, quarant ne, disinfection and interments and the prosecution of all physicians failing to report cases of dangerous contagious diseases coming under their observation.

The observance of the requirements of the statutes in regard to the preservation of public health might have prevented several cases of this dread disease that has caused so much sorrow in these communities. The duty of a physician called to treat a dangerous contagious disease is plain, and the laws governing such cases are simple and reasonable and failure to comply with them is reprehensible.

# REPORT ON AN ALLEGED VIOLATION OF QUARANTINE REGULATIONS AT MARION.

#### BY THE SECRETARY.

A communication was received from Dr. Stutz, health officer of Upper Sandusky, stating that great carelessness had been practiced in connection with the burial of a child in Marion who had died of diphtheria. The matter was reported to Dr. Stutz by Mr. Von Stein, of Upper Sandusky, a brother of the child's father, who attended the funeral. Mr. Von Stein reported that the funeral was public and that the body was exposed to view.

This seemed to be a case calling for investigation, especially as other complaints in regard to carelessness on the part of Marion's health officials had been brought to my notice.

Diphtheria has been prevailing in Marion for more than a year. For a time reports of contagious diseases were not regularly received from there, but since May 19, 1893, when the present health officer was appointed, to September 29, when this report was made, there has not been a week in which new cases were not reported; the total number during that time being sixty-five cases with three deaths.

I visited Marion on September 28, and first called on the health officer, Mr. Swisher, who is also marshal. The health officer went with me to call on Mr. Von Stein, father of the child spoken of. Mr. Von Stein stated that while the funeral had in a manner been public, great precautions had been taken to prevent spread of the disease. Some six or seven persons were allowed in the house, in addition to relatives—about fifteen or sixteen persons in all, none of those persons having children. The body was exposed at a closed window, persons outside walking by the window. After the funeral the house was thoroughly funigated.

These statements were verified by the book-keeper at the place where Mr. Von Stein is employed, the book-keeper having been present, and by the undertaker in charge; also by Dr. Wiant, the attending physician. I then called on the mayor and several members of the board of health, in regard to the complaint. While it was apparent that there had been carelessness in the burial of this child, there does not seem to have been that degree of carelessness that would justify prosecuting the board of health for neglect of duty.

The attention of all interested parties was called to the requirements of the State Board of Health for the prevention of contagious diseases, and to the duty of the local authorities to secure their enforcement.

Several other cases of infringement of the rules of the board have come to my knowledge, and I have particularly inquired into each of these, hoping to find a marked case where public sentiment would justify a trial in the court to determine whether the board will be upheld in requiring the local health authorities to enforce its rules.

#### REPORT ON SCARLET FEVER AT ATHENS.

#### BY THE SECRETARY.

August 10th a telegram was received from Mr. Welch, of Athens, stating that scarlet fever had appeared in the village and adjoining township, and that proper measures to prevent spread had not been taken.

I wrote at once to the health officer of Athens, who, in reply, stated that they were having some scarlet fever there, but that he had resigned as health officer as the board of health gave him no support and no salary.

I went to Athens on the following day, remaining there over night. I met Mr. Welch, and together we called on Dr. Tinker, who was attending the cases of scarlet fever in the township; these cases were close to the village. The Doctor stated that the township trustees had placarded the houses (there were three cases in two houses), and left instructions for all the inmates to remain at home. These instructions had not been obeyed, and there had been some unnecessary exposures. I learned that there had been some five or six cases of scarlet fever in the village, but apparently proper precautions were being taken to prevent the spread of the disease.

I was unable to see the health officer, but called on Mr. Roach, an influential member of the board of health. He complained that the orders of the board were not enforced, and stated that the mayor acted as an obstructionist. I explained the amended health act to him, which gives the board authority independent of the mayor; and urged him to have the board fix a salary for the health officer. This he promised to do.

On returning home, I wrote to the trustees of Athens township urging them to enforce strict quarantine measures in the scarlet fever cases. Two additional cases of scarlet fever have since been reported in the township.

On August 30th another telegram was received from Mr.Welch, requesting me to come to Athens immediately. I replied that I would come at the request of the board of health. A second telegram from Mr. Welch, signed by Mr. Roach as member of

the board of health, was received, renewing the request. I went to Athens on the following evening and found that they were having trouble owing to a misunderstanding of the powers and duties of individual members of the board of health and its president. Mr. Roach, acting without express authority, had quarantined a house containing searlet fever, and had placed a guard over it to restrain the inmates.

A meeting of the board was held next morning and full explanations were made. The rules and regulations of the board were found to be defective, and proper changes were suggested. The question of paying a health officer a salary was discussed, and I left with the understanding that this would be done.

#### REPORT OF SCARLET FEVER AT SOMERSET.

#### BY THE SECRETARY.

An urgent request to come to Somerset, was received from Mr. P. W. Walker, clerk of the board of health. He stated that scarlet fever had appeared in the village, and that owing to the fact that one of the physicians declared the disease to be "scarlet rash" and not contagious, the board was having great trouble in enforcing proper restrictive measures.

I went to Somerset on the 12th of September, and was met by the health officer, Mr. Fulkerson. Dr. Hayes requisted me to see some cases in a family in the township, just outside the village limits, Dr. Hayes being the township health officer.

I found in this family three children, all of whom had scarlet fever. The latest case had been attacked on the 9th inst, and presented well marked symptoms of scarlet fever. The first case, a girl of about nine, was taken sick August 30th. In this case, desquamation about the fingers was well marked. The only known exposure in the first case in this family was to the children of Mr. Culp, to which reference will be made later.

I next called on Dr. Clouse, who reported that he was treating two cases in his brother's family. The symptoms, as given by the doctor, pointed plainly to scarlet fever, and as he was quite positive that this was the trouble, I did not see the cases.

I then called on Dr. Woodward. He had charge of two cases in the family of Mr. Spencer, proprietor of a hotel. There were five children in this family, and two of them were ill, or had been. The first case, a girl of ten or eleven, was taken sick August 28th, and Dr. Hayes was called to the case. He pronounced it scarlet fever, and so reported it to the board of health of the village, of which he is a member. The board authorized him to enforce all necessary quarantine measures. He placarded the hotel, and quarantined all the family except Mr. Spencer, and prohibited all persons from entering the hotel. On September 3d, a boy of six was taken sick, and Dr. Hayes pronounced this another case or scarlet fever. He ordered Mr. Spencer to remain at home. Mr. Spencer demanded sustenance for himself and family, claiming that he was unable to pay for the same. This the board refused to grant. At this time Dr. Woodward was called into the case. He pronounced the disease "scarlet rash," and said, I was informed, that it was not contagious, and that there was no need of quarantine. Some one removed the quarantine card, and Mr. Spencer appeared on the street. A second card was placed on the house, and this was torn down the night preceding my arrival.

I called on Mr. Spencer with Dr. Woodward, and examined the cases. The boy presented no signs of recent illness, except a roughened skin. It was then eight days since he had been taken sick. The girl about the hands, fingers and toes, was desquamating in large patches characteristic of scarlet fever. Dr. Woodward acknowledged that this was a case of scarlet fever, and it is probable that the boy suffered with the same disease.

Mr. Spencer spoke bitterly of the action of the board of health, and pleaded to be allowed to open his hotel on the following day, when a stock sale was to be held there.

Inquiry as to the origin of the cases in Mr. Spencer's family developed the following: On August 28th, Mrs. Culp, a married daughter of Mr. Spencer, brought her two children to Dr. Woodward's office. Both children were ill with fever and an eruption which Dr. Woodward pronounced "scarlet rash" and non-contagious. The mother took the children to the hotel of her father and remained there nearly the whole day of August 24th. It was on August 28th that the first child in the Spencer family was taken with what was undoubtedly scarlet fever. On this same day, August 24th, the three children of Mr. Kintz, previously mentioned as township cases, met Mrs. Culp and her two children on the street, though they were at least ten or twelve feet apart. August 30th the first case appeared in the Kintz family So far as known there was no other source of exposure, as there were no other cases in the village or country about. No reliable information could be gained of the exposure of the Culp cases. Neither parents nor the physician considered them to be scarlet fever. The father gave a history of chill with vomiting, followed by fever and a scarlet eruption over the entire body, but maintained that there was no scaling, and that the disease lasted not mor · than a week.

The cases in the Clouse family were traceable to the Kintz family. Mrs. Kintz and Mr. Clouse are brother and sister. The day after the first case appeared in the Kintz family, the mother of Mrs. Kintz came by in a wagon in which were the Clouse children, her grandchildren. She stopped and went in to see the Kintz child who was then in the eruptive stage, and then took the Clouse children home. Six days later the first Clouse child was taken sick—the second child contracting the disease from this exposure.

A meeting of the board of health was held after I had made these investigations. I instructed the board as to their power, and also their duties in regard to enforcing the regulations of the State Board. The board decided to keep the hotel closed and quarantine all the inmates except Mr. Spencer, for ten days following the complete desquamation of the patients and disinfection of the premises. Mr. Spencer was allowed to come out provided he changed his clothing and would agree to keep apart from his children until they were through desquamating. The health officer was instructed to procure disinfectants and see that the hotel was properly disinfected.

The schools opened the day I was there, but as there had been no cases in new families for 12 days, I advised that they be continued. Teachers were instructed to examine pupils closely, and send all children promptly home who presented any signs of illness.

I may add, parenthetically, that one of the most interested members of the school board is Mr Sheridan, brother of the illustrious Phil. Sheridan of military fame, Somerset having been his boyhood home.

#### REPORT ON SMALL-POX AT CANTON.

#### BY THE SECRETARY.

On June 19, in answer to a telegram, Dr. Post, health officer of Canton, reported two cases of varioloid in that city.

Deeming it advisable to hunt up the origin of the cases, and to learn what had been done to prevent spread of the disease, I went to Canton on the night of the 20th.

The following history of the cases was obtained:

An Assyrian in Canton keeps a supply of articles which he disposes of to his countrymen, who peddle them from place to place, selling on commission. These

people also lodge with him, and as many as twenty or more are sometimes there over night, sleeping in indescribably filthy quarters.

On June 9th, Dr. Hudson, city poor physician, was called there to see a sick child eight months old. The child was reported to have had measles in Cleveland some months before, and died a few days after Dr. Hudson saw it, of lung complications.

A man was found in bed sick. On the following day Dr. Hudson examined and found him with a temperature of 104 degrees Fahrenheit, and a cough, also slight eruption about the forehead. On the third day, Sunday, the eruption was marked, with fever still at 104. Monday the case was pronounced varioloid by several physicians, though Dr. Conklin held it was not. Another man was also found in the same house suffering with fever and an eruption covering the entire body

A pest-house was erected on Monday and Tuesday, and on Wednesday, the 14th, both men were taken to it. The temperature in the first case was  $104 \frac{1}{2}$  degrees on that day, and the eruption was confined to the forehead, face and upper part of chest. Conflicting statements were made in regard to the character of the eruption, but it evidently was pustular in places.

In company with Dr. Conklin and Dr. Hudson, I visited the pest-house on the 21st. The patient first taken sick presented brownish spots about the face and upper part of the chest, the spots being level with skin, except in three or four places where pits similar to those seen in small-pox eruption were left. The patients was emaciated, had a cough and a copious muco-purulent expectoration, and a temperature of 1014F.

Small-pox might have been positively excluded in this case on account of the continuous high temperature after the eruption was fully out, except for the lung trouble. It will be remembered that cough and expectoration were present before, or at the time the eruption appeared, and this would probably account for the continuous high fever. From the character of the eruption I was not able to positively exclude small-pox. The other patient was apparently well, and presented no appearance of the eruptions, which had covered his body, and which was evidently an erythema. Neither patient could speak English.

We next visited the Assyrians in quarantine. There were eight of them confined, with one day guard and two night guards.

No satisfactory history of the patients could be obtained.

It was claimed that they had been in Canton for two months or more, having come to America about three months ago.

In peddling they had been to a number of Ohio towns, but not out of the state. All the quarantined persons had been vaccinated, as had also the two patients. A lower room in the house contained a number of boxes of goods to be peddled.

Dr. Post, health officer, was away, but returned just before I left. He said he had examined the patients, and did not think they had small-pox. He explained his telegram by saying he had just returned from Chicago on the day he wired me, and reported the cases on the strength of reports from other physicians who had seen the cases.

I advised that the quarantine should continue for fourteen days from the time of removing patients, and that the house and contents should be cleaned and disinfected. This was agreed to.

#### REPORT ON SMALL-POX IN GERMAN TOWNSHIP, DARKE COUNTY.

#### BY THE SECRETARY.

On October 9th, a communication was received from the clerk of the board of health of G rman township, reporting one case of small-pox in the negro settlement, about four miles from German P. O. The information was wired to me at

Chicago where I was attending a meeting of the American Public Health Association, commenced that day. There being no telegraph office at German it was impossible to communicate in that way with the board of health. I wired instructions to the home office to order strict quarantine, vaccination of all exposed persons, and to request a report of the exact situation. Ten points of fresh virus were sent to the board of health for immediate use.

Returning home on the morning of the 17th, a letter was found from the clerk of the German township board of health stating that the patient had recovered and no further danger was anticipated.

The Columbus Evening Dispatch of October 16th contained a special from Dayton reporting that the Dayton Board of Health had quarantined against Tampico, Darke county, on account of small-pox in a negro settlement there in the person of Mrs. Bass. I did not know at that time that this was the same case reported by the board of health of German township. As it was impossible to leave home on that day I telegraphed Dr. G. W. Burnett, of Greenville, health officer of Greenville township, which adjoins German township, to investigate the small-pox situation and telegraph me a full report. On the evening of the 10th he wired me that he had found one case of small-pox convalescent and two suspects, and would write a full report. On the morning of the 19th his report was received as follows:

GREENVILLE, OHIO, October 18, 1893.

DR. C. O. PROBST, Columbus, Ohio:

DEAR DOCTOR: In compliance with your telegram of yesterday I proceeded to investigate small-pox at German, Ohio. Palestine is the name of the town, German the name of the post-office, situated in German township nine miles south of west of Greenville. I went there and found that an old negro woman, wife of Elbert Bass, living four miles northwest of Palestine, was convalescing from an attack of varioloid. That Dr. W. H. Matchett, of Greenville, had seen her once, and that Dr. Bush had attended her. Dr. Bush moved on Monday the 16th inst., to Toledo, Ohio, therefore I did not get to see him. In company with Dr. G. J. Martz, of Palestine, I called at Mr. Bass's residence and we found Charles Bass and Richard Bass, sons of Elbert Bass, sick. Both complained of chills, fever, intense headache and lumbago, with pains in body and limbs, nausea and vomiting. This train of symptons began on Sunday evening the 15th inst., just three weeks from the night of their mother's attack. There is no eruption as yet. Dr. Martz is the attending physician. I called upon the township clerk, Mr. L. C. Ankerman, and found that a quarantine card had been placed on the house during Mrs. Bass's illness, and had already been removed. There seems to have been very little attention paid to the quarantine by the occupants of the infected house, for I learn that the two boys who are now sick have been running all over the surrounding country. I advised the township clerk to call the board together and establish quarantine over the house, and if necessary place a guard there in order to maintain it until the character of these two cases is fully determined, and as long thereafter as may be necessary. There are ten or twelve occupants of the house in which the disease is. All of them have been vaccinated, but only one of them successfully. So I advised that the rest be promptly re-vaccinated.

Will advise you of any future developments in the matter.
(Signed) G. W. BURNETT.

The situation seemed somewhat alarming, so I went to Greenville that evening and met Dr. Burnett. He kindly consented to go with me to German, to which place we drove on the following morning. We first called on the clerk of the township board and arranged for a meeting of the board. Then on Dr. Martz, who had been called to treat the suspected cases of small-pox. With him we drove to the negro

settlement and examined the patients. We found three cases of small-pox, two of which promised to be of severe character. The following history of the outbreak was obtained: About the 21st of August, Mable Smith, who had been visiting her grandmother, at the negro settlement, returned to her home in Muncie, Indiana. A week later she returned to her grandmother's-her mother, father and four brothers and sisters coming with her. No history of exposure to small-pox in Muncie could be learned. About two weeks after leaving Muncie-that is about September 11th, Mabel Smith was taken sick with chills, fever and headache, followed by a slight eruption about the face, body, arms and hands. The family claim to have believed it to be a case of hives. No physician was called. There remain slight pits on the face, arms and hands, and there is scarcely a doubt that she suffered with varioloid. On September 25th Mrs. Bass, a grandmother of the first case, had a similar attack. Dr. Bush, a colored physician, was appointed township health officer after having been called to see Mrs. Bass. The family disputed Dr. Bush's diagnosis of varioloid and the township board finally called Dr. Matchett, of Greenville, to see the case. He pronounced it varioloid. The family still disputed the diagnosis, and while a quarantine notice was placed on the house, no attention was paid to it. The younger children were kept from school, but the young men in the family continued to go at large. They attended church and visited several neighboring families. Dr. Bush vaccinated all the members of the family except the eldest son, but only one successfully.

On Sunday, October 2d, many of the church people called at the Bass house, and some of them took dinner there. It will be seen that there were a large number of persons exposed to small-pox, and I attribute their escape from the disease to the fact that the weather being warm the house was at all times freely ventilated. Dr. Bush moved to Toledo, October 16th. Mrs. Bass was reported well, though as will be noted by Dr. Burnett's report, she is still scaling. On this day, Monday, without any disinfection of house or its contents, two of the children were sent to school. On the same day Charles Bass, about twenty-three years of age, was seized with small-pox. He had visited Nashville, a small village near by, on this day, and it was reported visited the daughter of Wesley Clemmens in the evening. (Miss Clemmens teaches one of the colored schools.) On the following day, Tuesday the 17th, the children from the Bass family again attended school, and one of them took sick with small-pox on that day. Richard Bass, aged about twenty-one years, also took small-pox Tuesday. Wesley Clemmens visited the Bass house that day and afterwards came into the village of German. This was the day Dr. Burnett visited the cases. On the following day the township board again quarantined the Bass family and placed a guard, a colored man, on duty from 6 A. M. to midnight. I found the guard off duty, gone, I was told, for whisky, he being a confirmed drunkard. Dr. Martz, I should state, vaccinated all the unprotected—seven in all—on the night of the 19th.

I met two of the township board after dinner, and also the clerk. After discussing the situation and pointing out how their former carelessness was likely to result in an epidemic of small-pox at a cost of thousands of dollars to the township, I gave written orders for the following:

- 1. The appointment of two white guards for the Bass family, one for night, the other for day duty, and to close the road passing the house.
- 2. The immediate vaccination or quarantine of all children who attended school with the children from the Bass family and of those who attended the school taught by Miss Clemmens.
- 3. Quarantine for fourteen days of Wesley Clemmens and family, he having visited the Bass family on the 17th.
- 4. Closure for fourteen days, or longer if necessary, of the two schools exposed through children from the Bass family and through Miss Clemmens.

5. Closure of Sunday-schools and churches in the infected district for two weeks, or longer if necessary.

6. A house to house inspection in the infected district by a physician instructed to search for concealed or suspected cases, and to vaccinate, as far as possible, the entire population at township expense.

7. To require a certificate of vaccination from all children attending school in

the township.

8. To quarantine all small-pox suspects until the character of the disease could be determined

9. To have all houses in which small-pox occurred disinfected under the super-

vision of a physician.

I urged the appointment of a physician to superintend quarantine, to carry out the vaccination order and to treat the sick, and Dr. Martz was appointed health officer, with instructions as above, at a salary of ten dollars per day.

Orders for vaccination, for quarantine and closing of schools and churches were written out, adopted by the board and given to Dr. Martz to serve. As it had been three days since the school children had been exposed, I urged the doctor to hunt them up and vaccinate them that day. Dr. Martz is a wide-awake and determined physician, and the work could not be placed in better hands, except for his lack of quarantine experience. The township board promised to strictly enforce all orders.

. I learned that the village of German P. O., or Palestine, was incorporated, but without a board of health. I called on the mayor and he agreed to call a meeting of the council that night to have a board appointed. Full instructions for organizing a board were left with him.

Small-pox could scarcely have appeared in a worse community in the state. This negro settlement was founded by a southern slave-owner before the war, his negroes having been freed and brought there. Intermarriage with the whites has been so frequent that most of the descendants are with difficulty distinguished from the white race. While not to be classed as lawless, they are very difficult to control. It may well be feared, should the numerous recent exposures result in small-pox through the settlement, that a serious epidemic will result.

Dr. Martz has promised to keep me constantly informed of the progress of the disease.

October 22d a telegram was received from r. Burnett, reporting the death of Richard Bass. Charles Bass died a few days later. One other case, a young son of Mrs. Bass, occurred in the family. Strict quarantine was maintained for several weeks and general vaccination was enforced throughout the settlement. No further spread of the disease occurred.

### REPORT ON SMALL-POX AT NORWOOD.

#### BY THE SECRETARY.

On December 30th Dr. Tidball, health officer of Norwood, reported a case of small pox in Norwood. On the 31st he reported a second case in the country near Norwood, and stated that the case in Norwood had been taken to the house where the second case existed, which was outside of his jurisdiction. He requested to know whether the State Board would take charge of the case.

I wired him that the township trustees had full quarantine powers in such cases, and authorized him to enforce necessary measures until the trustees could take charge of the cases.

On December 31st Dr. Prendergast, health officer of Cincinnati, telegraphed me to come down if possible and look after the cases. I wired Dr. Stanton in regard to

the matter, and received a message from him requesting me to come to Cincinnati. I met Dr. Stanton and Dr. Prendergast on January 1st, and together we went to the house near Norwood in which were the cases of small-pox.

Here we secured a history of the cases, which agreed substantially with the following report by Dr. Hopkins, the attending physician: "There arrived here November 25, 1892, from Marl, near Lemforde, Germany, by the steamer "Saale," Bremen line, the following persons: John Frederick Ruscher, age 68 (widower), and family, consisting of two sons and son-in-law and their wives, viz., Henry Ruscher and wife, Frederick Ruscher and wife and Gustavus Saarbrueck and wife. Henry Ruscher had six children, aged from two to twelve. Fred Ruscher had four, aged two to seven years. Saarbrueck had an adopted daughter, aged fifteen years (Sophia Gritmeier), and a servant girl (Sophia Meyer), in all nineteen persons. There were also in the party Mrs. Louise Bunger and son, making a total of twentyone who came to Norwood from the steamer "Saale."

Mr. Saarbruck said they arrived in New York harbor on November 22, 1892; they landed on the twenty-third, and came directly to Norwood. There was on board the steamer a woman with two children, one of whom was sick. These three were kept in a small room in the hospital and no one was allowed to see them until they arrived in New York. When the vessel was inspected the three were put in a small boat and taken ashore; and after a long talk between the captain and the inspector, the steamer was disinfected with sulphur and they were allowed to proceed. Parties who caught sight of the child said it had spots all over its face, but were told it had measles. They arrived in Norwood on the twenty-fifth and on the twenty-sixth the two-year-old son of Henry Ruscher was taken sick with fever and swelling of the entire body, especially the limbs, but no eruption. He was very sick for a week and not expected to recover, but had no physician. At the same time the two-year-old son of Fred was taken sick, the face and neck swelling, and some physician lanced the neck. On December 4th Henry Ruscher, the father of the first sick boy, was taken with chills, fever, pain in limbs for three days, when an eruption appeared, first on the wrists, then on the ankles and feet, and then on the forehead, and lastly on the nose. There was no eruption on the body except where mentioned. Henry's wife also had chills, fever, severe pain in limbs and slight eruption, which passed away in a few days. Sophia Gritmeier was sick, with pains all over and red spots under the skin, which passed away in several days. Sophia Meyer, about the thirtieth of November, hal a severe sore on the hand, which lasted for a week or more. She had it lanced twice by a physician in Avondule; she could not work, so went to live with a married sister in Cumminsville. (Will hunt her up.) Mr. Saarbrueck, on November 28, had a large blood boil on left wrist, very painful; still has scar. Frederick Ruscher, about the fifteenth of December, had a boil on the right hand; still sore and has it tied up to keep cold out. He said his hand was swollen as large as three hands. The spot now resembles a goodsized small-pox pustule, dark in center and umbilicated. Had probably a half-dozen small sores on his hand, but none on any other part of body. About December 22d Mrs. Saarbrueck commenced complaining of pains in limbs and feeling cold, which symptoms continued to grow worse up to the twenty-seventh, when a physician was called in for the first time since their arrival. She grew worse until the thirtyfirst of the month, when she died of confluent small-pox. These people all lived in one house, with the exception of Frederick Ruscher and family, who lived about a mile distant. His wife was taken sick about the twentieth and developed a case of confinent small-pox and was removed to the Saarbrueck house.

I allowed Saarbrueck to see his wife buried. He was taken there in a closed carriage, spoke to no one, was returned to the house, the carriage thoroughly fumigated, and he and the others put under guard day and night. I am the only one

who enters the house. The trustees of the township are doing everything they can to prevent spread of the disease. Have not heard of any new cases. I will hunt up Mrs. Bunger and son, and the girl, Sophia Meyer, who went to live with her sister, and will keep them under surveillance.

Respectfully,

W. H. HOPKINS, M. D. Norwood, O.

Dr. Hopkins neglected to say that all of these immigrants, except one, were vaccinated when four days out at sea; and all of the immates of the house where the cases were, were re-vaccinated on December 30th, excepting the one who was not vaccinated on shipboard, and he was vaccinated January Ist.

Mrs Saarbrueck died December 31st, and had not yet been buried when we were there. Her husband, who had been nursing her and her brother, we learned, had gone to Cincinnati to make arrangements for the burial. This they did against the positive orders of Dr. Stanton, given the previous day, that no one should leave the premises. There were no guards over the house, and no special precautions were being taken to confine the disease. We then called on Dr. Tidball, health officer of Norwood, who informed us he had thoroughly disinfected the house in Norwood from which the case had been removed, and that, as far as known, every person in Norwood, who had been exposed, had been vaccinated. He said he had sent word to the trustee of the township in which the cases were, and who lived in Norwood, but the trustee was not at home. He had not employed guards for quarantine because he was not sure the State Board of Health would pay them. Dr. Tidball stated that the boxes which contained the clothing and effects of the immigrants who came to Norwood, had on them certificates of disinfection at New York quarantine. We examined several such boxes found at the Saarbrueck house, but there was no certificate of disinfection. Mr. Berger, the trustee who lives in Norwood, met us at Dr. Tidball's office. He promised to place a quarantine guard over the house that night, and to arrange for all necessary precautions to be taken to prevent spread of the disease. He was urged to have the body of Mrs. Saarbrueck buried early next day, and promised to do so.

Dr. Prendergast wired me January 12th, that a case of small-pox had occurred in Cincinnati, and in a letter informed me that the patient was an undertaker who had embalmed the body of Mrs. Saarbrueck. As far as known, this is the only case outside of these immigrants, which has yet occurred from this source of infection. January 15th, while in Akron, I received a telegram from Dr. Hopkins, attending physician, stating that the trustees were objecting to the expense of quarantine, and had refused to pay for provisions, which were being charged to them. He desired to know how much longer quarantine should be maintained. I wired him that the trustees would be held responsible for any neglect in quarantine, and referred him to Dr. Stanton for further instructions. I had previously received a letter from one of the trustees asking who would be expected to pay quarantine expenses. I referred him to the statutes requiring the township trustees to enforce measures to prevent spread of small-pox, and stated that the duty of the township to pay expenses therefor had not previously been questioned.

#### REPORT ON TYPHOID FEVER AT HURON.

#### BY THE SECRETARY.

In accordance with your instructions, I went to Huron on June 1st, and there met Dr. J. H. Calvin, the health officer.

I learned that cases of fever had been occurring in the village at intervals since January, 1893. There had been in all twenty-six cases, all in the hands of Dr. Walsh and Dr. Calvin. Most of the patients had recovered or were convalescent, and no deaths had occurred.

There had, unfortunately, arisen a question as to the true nature of the fever. Dr. Calvin maintained that the cases seen by him were typhoid fever, while Dr. Walsh pronounced his cases remittent fever. I examined several of Dr. Calvin's patients and obtained a clear history of typhoid fever—the prodromal malaise followed by continued but gradually increasing fever, with diarrhæa and tympanites well marked.

Dr. Walsh's patients had all recovered, but the doctor gave a history of a high initial fever—often 103 or 104 degrees at the first visit, and no diarrhæa except in one case, to which further reference will be made.

I talked with Mrs. —— who had had the fever, and whose husband and child had also been affected. These were all patients of Dr. Walsh. She stated that all of them had suffered with diarrhoea, and that her husband had been confined to bed four or five weeks. She was quite positive diarrhoea had been a prominent symptom in several cases in neighboring families treated by Dr. Walsh. Most of the persons had been sick from three to five weeks.

Sixteen cases of typhoid fever were in houses near to each other, and on the same side of the street. Fifteen of these had used water from one well, about 100 feet south of the house in which the first case occurred. One family living amidst this group of houses did not use water from this well, and none of its members had the disease. Three families in which four cases occurred outside of this district obtained milk from a house in which there was a case of typhoid fever. There was no proof that the milk was infected.

The first case to occur was a lady, Mrs. ———, who was taken sick early in January. This lady was a frequent visitor to Cleveland, but as she was not at home while I was in Huron, I could not learn the dates of her visits prior to her illness. As she was treated for remittent fever, her stools were not disinfected, and were thrown into an uncemented privy vault back of her house. This case was treated by Dr. Walsh and was the only case, he stated, in which diarrhoea had been present. Some weeks later a second case occurred in an adjoining house. Other cases followed until, counting all cases of continued fever, there were twenty-six cases in about five months.

The drainage in this part of the village is towards the lake, but the fall is slight, and the flow of surface water is often impeded. The soil is quicksand overlying hardpan. Water in the wells is obtained in the rock at a depth of 10 to 12 feet from the surface. The slope of the hardpan is from the lake, so that drainage from vaults would be in a direction opposite to the surface drainage—that is south from the lake.

Assuming that these cases were typhoid fever, or typhoid fever complicated with malarial, as I believe many of them to have been, the cause of the disease would seem to have been the introduction of the disease by the lady coming from Cleveland; the deposit of her stools in an uncemented vault dug in quicksand, and the subsequent filtration of the typhoid fever germs along the slope of the underlying shale into the wells, and especially one particular well about 100 feet from the vault.

The pond indicated on the sketch, contains considerable water. At the upper end a township ditch opens into it. At the lower or lake end, it is partially closed by sand thrown up by wave action. In storms waves go over the obstruction and fill the pond. When the waves subside much of the water escapes into the lake. Hundreds of acres in the village and surrounding it are covered with water, as the ground in many places is below lake level. Malarial fevers, doubtless from this cause, are common, and most diseases are complicated with malaria. Purely malarial fevers are readily controlled by quinine and are seldom of more than two weeks duration.

Dr. J. H. Calvin, health officer, has furnished the following additional report of the outbreak:

It has been probably twenty years since this village (Huron) has had more than a few cases of typhoid fever. In the last six or eight years previous to the present year there have been not more than a dozen cases, two or three of which proved fatal. Most of these cases occurred in what is now the infected district.

Most of this town is underlaid with a subsoil of quicksand underneath which there is a hardpan. The surface of the ground slopes gently toward the lake and toward a marsh or lagoon on the west and the Huron river on the east. The hardpan slopes from the lake so that ground water flows from, rather than toward, the lake, but toward the lagoon on the west. No special sanitary measures have ever been entorced except to put a sewer in the main street.

In January last a lady came home from Cleveland, where she had been visiting, and was taken ill at A soon after returning. This lady was seriously ill for a good while, having severe diarrhæa, tympanites, delirium, sordes, and later her hair came out.

There were next two cases at B, that were exposed to stools, and also to water, from a well at C. At A there is a vault several feet deep. From A the water flows readily through the quicksand towards the well at C. This was fully shown by the fact that some time since the water in a cistern at B was pumped out on the ground and in a short time this water found its way into the well at C, showing that surface water impregnated with the stools from A might easily have found its way to the well at C. We find now, two cases at C, three at D, four at E, one at F, one at G, two at L, two at J and one at O, or in all fifteen cases that were exposed by drinking water from the well at C. The family living at 2 did not use water from this well and none of them were sick. The young lady at F, whose mother lived at H, went from F to H before she was fit to do so. We next find a case at I, two at K and one at N, who drank milk from H. The two cases at M. were in the infected district. The case at I came from Cleveland.

Several of these cases have been diagnosed as malarial fever of remittent type, notwithstanding several of them occurred when the ground and the marsh were frozen solid. Those living nearest the marsh escaped. As the marsh dried off and the weather became warmer there were fewer cases of fever. So long as no precautions were taken the cases rapidly multiplied. As soon as the people were alarmed and were careful there was no further trouble; but later the milk at H., as already noted, seems to have been infected, probably through the water at that place—a well.

There is a well at K from which a number of families obtain water. They have been warned as to the danger they are in by using this water.

With reference to malaria it may be said that malarial effects are to be seen in most diseases, and require treatment. In the present outbreak of fever most patients had a temperature of as much as 105 degrees when first seen by a physician. That this high temperature was not due to typhoid, but malaria, is most probable. In every instance the patient had been complaining for a week or two before giving up. Large doses of quinine would in the cases of high temperature reduce that to 102 to 103 degrees, but in no instance was it possible to further overcome the high temperature.

## REPORT ON TYPHOID FEVER AT NORTH LEWISBURG.

#### BY THE SECRETARY.

A communication was received from the board of health of North Lewisburg requesting me to come there and aid the board in controlling an outbreak of typhoid fever.

North Lewisburg is a village of 1,100 inhabitants in Champaign county, on the New York, Pennsylvania and Ohio railroad. The village is an agricultural one of few or no factories, located on a level plain, a small stream skirting its borders.

Typhoid fever has occurred almost annually in the village for some years, and during the present year there had been up to the time of my visit, some thirty cases and one death.

The board of health had endeavored to enforce proper measures against spread-The mayor had issued a proclamation urging the people to use only boiled water for drinking, and the board had endeavored to secure reports of all cases from physicians and had placarded houses containing cases. They had also sent the health officer to each house to urge proper disinfection of stools.

They met with many difficulties. First, one or two of the physicians called their cases malarial fever and refused to report them. Then the citizens, especially merchants, objected to having the houses placarded. But the greatest difficulty was on account of one or two physicians who maintained that typhoid fever could not be communicated by the sick to the well, and pool-poohed the idea of boiling the water or disinfecting the stools.

I visited a number of the cases and satisfied myself that they were typhoid fever. In the afternoon I met the board of health and examined their health ordinances and rules and regulations and found they had been legally adopted and published.

The board was at a loss to know what could be done with one of their oldest and most influential physicians who defeated their efforts by maintaining in all his families that typhoid fever could not be communicated.

I pointed out that the law provides that whoever obstructs or interferes with the orders of the board of health is equally liable with one who refuses or neglects to obey them; and advised them to prosecute this physician the first time proof was offered that he had advised against an order of the board of health requiring disinfection of the stools of typhoid fever patients.

On returning I made the following report to the board of health:

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, September 15, 1893.

To the Board of Health, North Lewisburg, Ohio:

GENTLEMEN: I beg leave to respectfully report as follows concerning my investigation of the prevalence of fever in your village, made yesterday at your request:

There being some question as to the character of the disease prevailing in your village, it was essential to determine that matter first. I am indebted to Drs. Emmons and Williams for having shown me many of their cases. From an examination of these cases I have no hesitancy in pronouncing them typhoid fever, in which opinion the attending physicians agreed. A number of cases of fever of short duration have occurred about which there is some doubt. I was unable to examine a case of this character, and while it is possible that such cases are of malarial character, both diseases being present, it is well known that in epidemics of typhoid fever, mild cases usually occur which would be overlooked except for the presence of well marked cases; so I am inclined to the opinion that many, if not all of these mild cases of fever which have occurred in your village have been cases of typhoid fever.

Before speaking of recommendations, I desire to commend your board for its prompt and intelligent action to prevent spread of the disease. The mayor's proclamation to boil all water used for drinking and culinary purposes, if universally

followed, would in all probability at once cut short the epidemic, as we have witnessed many times in our state. The further recommendation of the board, that the stools of all typhoid fever patients should be disinfected, was also a wise measure for preventing spread of the disease. I would call your attention, however, to the fact that this recommendation is being quite generally neglected, as in only one of some ten or twelve households that I have visited, was disinfection being carried out. A number of persons to whom I spoke of this matter seemed to consider that the only need of a disinfectant was to destroy bad odors, having apparently no conception of the real purpose of disinfecting the stools of typhoid fever cases. I learned further, that one, and possibly more of your physicians oppose the use of disinfectants in cases of typhoid fever, thus annualling the recommendation of your board.

The probable cause of the prevalence of typhoid fever in your village, in my opinion, is the pollution of your wells. The character of your soil, being of loose sand and gravel in most places, the fact that your privy vaults are not cemented or water tight, and that it has been the practice in cases of the disease which have occurred in previous years to throw the stools into vaults or bury them in the ground without previous disinfection, gives strong support to this view.

I have to recommend that for the control of the present epidemic you will, 1st. Urge upon all the people the necessity of drinking only water which has been boiled. 2d. Adopt a rule requiring disinfection of stools in all cases of typhoid fever, and of all body linen or bed linen soiled by discharges of typhoid fever patients. 3d. Have your health officer serve an order to that effect upon the heads of all households containing cases of the disease. 4th. Prosecute physicians or others who interefere with, or obstruct the execution of any orders of the board of health, as you are authorized by law to do. 5th. As your people will probably always have to depend on wells for a water supply, your board should adopt regulations looking towards their protection against fecal matter in the soil, and for this purpose should enforce a rule requiring all privy vaults to be made water tight unless a dry earth closet above ground is substituted. The latter plan, I am of the opinion, will give greater protection; and if such dry earth closets are properly cared for, will be attended with less offense.

I will send you to-day a package of pamphlets issued by the State Board of Health on measures to be taken to prevent typhoid fever, and would advise that these be distributed about the village.

Very respectfully,

C. O. PROBST, Secretary.

#### REPORT ON TYPHOID FEVER AT ORRVILLE.

#### BY THE SECRETARY.

On my way home from Huron I stopped at Orrville, at the request of the board of health, and met some of the members, who reported that two deaths had recently occurred in one house from typhoid fever, and that two other severe cases existed in the same house. A death from typhoid fever occurred in this house about a year ago.

I made an examination of the house and gained the following additional information: The house is located on the side of a gently sloping hill. The well, a dug well, is just back of the kitchen. A closet, provided with a wooden drawer above ground, is at the rear of the lot. On the adjoining lot at a higher level, and sixty or seventy feet from the well, is a stable, and quite an accumulation of manure.

The entire family being sick or dead, accurate information in regard to the original case could not be obtained, but from reports of neighbors it was learned

that in the case which terminated fatally a year ago, the stools were not disinfected, but were buried in the lot about fifty feet from the well. The stools in the two cases which had recently died had also been buried without disinfection near the same place in the yard. The geological formation in that neighborhood is a loose top soil on rock, water being found in the rock. The dip of the underlying rock is toward the well from the spot where the stools were buried, and corresponds with the slope of the surface.

In an adjoining house below, a lady had been sick two weeks or more with what the attending physician pronounced malarial fever, but the husband later was taken with typhoid fever, and it is probable that both cases were of this character.

The probabilities are that the wells at both houses had recently become infected with the germs of typhoid fever buried a year ago on the slope above them. The heavy rainfall of this spring would tend to produce this result.

I made the following recommendations to the board of health:

## To the Board of Health, Orrville, Ohio:

GENTLEMEN: Having, at your request, investigated the outbreak of typhoid fever in your village, I beg leave to offer the following recommendations:

- 1. Temporarily close the wells of Mr. Hursh and Mr. Beidler, where the cases of typhoid fever exist, and have them thoroughly cleaned before they are again used.
- 2. Advise all persons in that neighborhood to boil the water they use for drinking.
- 3. Uncover the stools of the patients at Mr. Hursh's residence which are buried in the yard not far from the well, and cover them with a considerable amount of fresh unslaked lime or fresh chloride of lime.
- 4. Be assured by personal inquiry that the stools, and bed and body linen of typhoid tever patients are being properly disinfected.

From what I was able to learn it seems probable that the stools from the patient who died at the Hursh residence a year or more ago, were buried in the back yard not far from the well, the stools not having been disinfected, and from the character of the soil in that neighborhood, it is at least probable that the well at this house, and possibly also the well of Mr. Beidler, has become contaminated by the typhoid fever g rms contained in those stools, and that the subsequent cases have all been due to the use of such polluted water.

In this connection I desire to call your attention to the necessity of protecting your wells. Unless privy-vau:ts are water tight their contents must soak into the soil, and often pollute wells at a great distance.

I would advise your board to enforce a rule requiring all persons to obtain a permit from the board of health to construct a privy-vault, and allow no vault to be built except in the manner prescribed by the board.

I have the honor to be, very respectfully,

C. O. Probst, Secretary State Board of Health.

#### REPORT ON TYPHOID FEVER AT RISING SUN.

### BY THE SECRETARY.

A letter was received, and subsequently a telegram, from the mayor of Rising Sun, Wood county, requesting me to come there to investigate the cause of an epidemic of typhoid fever with which the village was suffering.

I went to Rising Sun, August 20th, and in company with the mayor made an inspection of the village and gathered all available information concerning the outbreak of fever. I learned that the disease first appeared the latter part of July, and that in a month's time an unknown number of cases of the fever, variously estimated at from thirty to fifty, and five deaths had occurred. The mayor stated, indeed, that the majority of the inhabitants had been more or less affected; the mild cases having vomiting with diarrhea, the illness lasting but two or three days. These were scarcely to be considered as cases of typhoid fever, although others of which there could be no doubt had occurred—as already stated, there had been five deaths. I learned further that typhoid fever had not been known in the village for twenty years or more until six years ago when a druggist contracted the disease and died. Several other cases among relatives of this man occurred the same year. I questioned the wife and mother-in-law of this druggist, but could learn nothing definite bearing upon the probable source of the disease, except that he used frequently to go to Cleveland and Fostoria and might have been in either place during the ten days or two weeks prior to his illness.

The stools of this patient were thrown into a privy-vault at the back of the drug store, about seventy five or eighty feet from the well in use at the store, and probably a little more than twice that distance from a public well on the street.

Every fall, except one, since this person died of typhoid fever, there has been a recurrence of the disease, but never such a large number of cases as at this time.

Inquiry as to the geological formation of the village site brought out some interesting matter. East of the Hocking Valley railroad, which runs through the edge of the village, there is a limestone formation which in many places crops out at the surface, while at no place in this part of the village is this rock covered with more than a few feet of earth. Wells are bored into the rock, water being found at from eighteen to twenty-two feet. Most of the privy vaults are excavated in this limestone rock, and none of them are water-tight. West of the railroad there is a thick bed of clay, twelve to fourteen feet deep, and typhoid fever has never occurred in any of the twenty-five or thirty families living in this part of the village. At the southwest part of the village, but still east of the railroad, there are two abandoned stone quarries which stand full of water. At the time of my arrival a steam pump had been fitted up and these quarries were being emptied. The limestone showed large crevices running in various directions, and it was evident that wells near to privy vaults in such a formation could scarcely escape pollution.

In a small sink hole near one of the quarries, and draining into it, were two barrels of night soil which had been removed from a vault in the village. As the pumping of the quarries was continued and the bottom reached, the decaying body of a hog was found in one, and also two barrels of night soil. It was reported that this night soil was removed from the privy vault of a baker, shortly after he had suffered with typhoid fever, sometime this spring. I used every effort to verify this report, but the villagers seemed fearful that prosecution would follow, and no authentic information could be gained. I judged, however, that the report was correct. The bottoms of these quarries were covered with two feet or more of an exceedingly foul muck.

When the quarries were emptied it was discovered that many of the wells in the village were lowered or had gone dry. One well a half a mile from the quarries had all its water drawn from it.

I formed the opinion that the epidemic was probably due to pollution of the wells by leaking privy vaults, and possibly in part by water from the quarries, which may have been specifically polluted by the night soil thrown into them. When the ground water was high, in the spring and early summer, the wells would not drain the quarries, but when the ground water was much lowered, as it was in July and August, the quarries remaining partly full, the flow of water would probably be toward the wells. It would be extremely interesting to establish this fact, and I hope to be able to visit the place again and conclude the investigation.

Rising Sun contains 500 inhabitants, and had no board of health when I was there. I gave the mayor instructions for establishing a board of health, and this has been done.

On returning home I made the following report to the mayor:

OHIO STATE BOARD OF HEALTH, SECRETARY'S OFFICE, COLUMBUS, OHIO, Alugust 31, 1893.

To the Mayor and Council, Rising Sun, Ohio:

GENTLEMEN: Having been called to investigate the cause of the prevalence of typhoid fever in your village I beg leave to submit the following preliminary report and recommendations:

In my opinion your cases of typhoid fever have been caused by the pollution of your wells. On account of the geological formation underlying your village—a bed of limestone, approaching the surface—your wells and privy vaults undoubtedly communicate, and especially in times of drought, as at present. Typhoid fever was first brought to the village six years ago, and the stools of the patient were thrown into a privy vault without disinfection. Since that time, with the exception of one year, typhoid fever has occurred each fall.

Within the corporation are two abandoned quarries which have been filled with foul, stagnant water. This spring several barrels of night soil from privies were thrown into and near these quarries, and it was reported that this had been removed from a vault on the premises of a typhoid fever patient. The water is now being pumped from these quarries, and as a result many of the wells—some of them nearly half a mile distant—are being lowered, showing the connection between the weils and the quarries.

I am inclined to be ieve that the contaminated water of these quarries has been polluting your wells, and that this is largely the cause of your present epidemic. The fact that ice taken from that quarry last winter has been used in drinking water may possibly account for some of the cases.

There is not a well in the village that can be pronounced free from danger, and the first thing to be recommended is that a proclamation be issued by the mayor, urging all persons to boil the water before using it for drinking or culinary purposes.

Second, the quarries should be emptied of water and the filth removed from them.

Third, as your schools open soon, care should be taken to provide boiled water for pupils, temporarily closing the school-house well

Fourth, a board of health should be established at once, and a health officer should be instructed to insure the proper use of disinfectants in all cases of typhoid fever.

In conclusion, I would say that in my judgment you will always be liable to epidemics of typhoid fever and other diseases caused by the use of polluted water until you provide against contamination of wells. This may be done by prohibiting privy vaults and substituting boxes or tubs, with the use of dry earth, or by making all vaults water tight by cementing them. The use of dry earth boxes will be much the better plan. Water tight eisterns would also afford water not liable to pollution.

The presence of the stone quarries will also always endanger your wells, and I see no way of removing this evil except by filling these quarries.

Finally, great care must be taken to promptly remove all surface filth from streets, alleys and yards, for the rains carry this into the ground, and then into the wells with but little opportunity for filtration of the water in its passage through the soil.

Respectfully,

<sup>° (</sup>Signed)

#### REPORT ON THE WATER SUPPLY OF BUCYRUS AND UPPER SANDUSKY

BY S. A. CONKLIN AND E. T. NELSON, COMMITTEE.

To the State Board of Health:

Your committee appointed to examine the water supply of Upper Sandusky and Bucyrus, and incidentally thereto, the condition of the tributaries of the Sandusky river at Crestline, beg to submit this partial report of our investigations:

## CONDITIONS AT CRESTLINE.

Sandusky river, like many another stream in the state, rises from several branches and it is at once very difficult and very interesting, to attempt to unravel the threads and find the true source. All the maps and all the observers, agree that the source of the Sandusky river is near Crestline, and that after flowing in a westerly direction past Bucyrus and Upper Sandusky, it turns north and passes Tiffin and Fostoria on its way to Lake Erie. The true source is perhaps a spring from which the town of Crestline obtains its water supply. Two branches or small creeks flow through the town. These unite into a single stream a short distance to the west. The eastern branch is the one to which we gave our attention. After flowing through a farming district of the usual character, this stream enters into the town of Crestline from the south, passing under the tracks of the Pittsburg, Ft. Wayne & Chicago railway. It then is carried to the alley south of Bucyrus street for some distance; then it turns to the north and west and crosses Bucyrus and Scott streets and the tracks of the Big Four railway, and thence passes north to the town limits-Throughout this district, there is perhaps no portion of the stream in even a fair sanitary condition. Old cans, broken dishes, weeds, garbage, rocks and broken bricks, abound throughout the course of the stream and impede the flow of water. If this were all there might be some hope of security in time of danger, but all the barns and other out-buildings along the stream have been constructed where they can produce the greatest amount of contamination with the least trouble to the owners of the premises. Some of the barns rest on timber foundations reaching over the line of the stream. No privy along the stream has any pit, and for the most part all are innocent of any protection below the level of the seat. Just south of Scott street, the lines of excrement extend to the water's edge, while in the alley near the roller mills, trap doors have been so arranged as to permit an ever direct communication with the water course. One man has been careful enough to construct an outlet from his ou -building at a height of one foot above the water. At the time of our visit a stream of blood was flowing through this outlet. We were unable to ascertain whether the family was engaged in killing hogs, or was suffering from excessive menses. So badly polluted is this portion of the stream that the people call it "Stink creek." The town is not sewered, though a few sewers occur, all opening into this branch. The largest is from the Continental hotel.

At the time of our visit (April 21), Crestline was without the slightest pretense of a board of health or health officer, owing to some sort of a misunderstanding between the old board and the mayor of the town. His honor had secured the passage of an ordinance abolishing the board, and the passage of another, creating a new one. The persons nominated had not been sworn into office, one or two of them refusing to serve. The mayor being out of the city, no one had any authority. We called on Dr. Trimble, the former health officer, and learned much about the general health of the city.

The health officer of Bucyrus, Dr. C. H. Noblet, came over to hold a conference with us in regard to the relation of the stream at Crestline to the water supply of

Bucyrus, which is taken from the Sandusky river. In a short but satisfactory conversation, plans were laid for an investigation at Bucyrus, which could not be made at this time from the fact that the chairman of the committee was compelled to return to Canton by the evening train. Under a separate cover we present a report of a visit and inspection at Upper Sandusky.

#### CONDITIONS AT BUCYRUS.

Crawford county, of which Bucyrus is the county seat, is situated on the great water-shed which separates Lake Erie from the Ohio river. In the northern portion of the county, the streams belong to the Huro river; in the central portion, to the Sandusky river, which here flows in a south-westerly direction; while the streams in the eastern and southern portions of the county, belong to the Scioto and the Olentangy. It is probable that more large rivers have their source in Crawford than in any other county of the state. As might be expected, all these tributaries are quite small, especially in the summer time. The county abounds in springs from which many of these streams arise, and for this re son the flow of water is not stopped even in the dryest weather.

The older part of the town of Bucyrus is situated on rolling ground, and on the bank of the Sandusky river, lut the rapid increase in population, which followed the construction of the Toledo and Ohio Central Railway, has led to the extension of the streets in the direction of the "plains," a low and very flat district to the south. In this prairie district the soil is a black-loam charged with a large amount of organic matter. At the time of our visit, owing to the heavy rains of the past two weeks, the soil was saturated with water. Unless well drained, the land is always wet and poorly fitted for farming.

The city of Bucyrus early felt the need of a larger and purer water supply than that afforded by the shallow wells then existing. Many plans were proposed, but the only action taken was that of allowing a foreign corporation to erect pumping works and pipe the streets.

We are indebted to the Manual of American Water-works (1890) for the following figures and data:

The water-works of Bucyrus were erected in 1883-4 by a private company under a thirty years franchise. The water is obtained from a well fifty feet in diameter and twenty feet in depth, walled up with cut stone. The water is filtered and sent through the mains by direct pumping. The contract was let in 1889 for "Gaskill horizontal pumping machinery," with a daily capacity of 1,500,000 gallons. Two Hyatt filters were added to the equipment, with a daily capacity of 650,000 gallons. The mains, 12 miles in length, are made of wood, steel-bound. The service pipes are made of lead. Consumption is 265,000 gallors. Taps, 235; hydrants, 101 public and 1 private. The cost of the plant has been \$108,600. The city pays the company \$5,140 for fire protection.

The growth of the city, since this report was published, has been such as to greatly increase the number of taps, and slightly the number of hydrants. The work of paving the streets with brick, which is now going forward rapidly, is creating a demand for service connection.

The three rairroads entering Bucyrus have contracted with this company for such an amount of water daily as will be required for their engines and shops. This, with other increased demands has run the daily output up to 650,000 gallons, as we were informed

Very early in the history of this enterprise, it was found that the well could not be depended upon for a supply of water, and connection was had with the Sandusky river by means of pipe. For some time the river has been the only source, the amount from the well being too small to figure in the problem. This water is drawn

into the well and from that into the Hyatt filters. As the supply in the river runs very low in the summer months, a dam, perhaps 18 inches in height, has been thrown across the stream at the pumping station. Another has been thrown across the stream at a higher point, for the purpose of impounding the water until required.

It is not necessary to describe the Hyatt filters. They are of the usual construction. The engineer informed us that he was using about one and a half grains of alum for every gallon of water filtered. The time of our visit was not well selected. Rains had fallen the night before over the head-waters of the Sandusky river and that stream was full to its banks with a fluid that would have done honor to the Missouri. The Hyatt filters quailed before such a problem and allowed the mud to flow on into the pipes for city distribution. It is too much to ask of any filter, (of the size and quantity of filtering material here employed) to purify the amount of water passing through them at the time of our visit. Everything about the pumping house was in perfect order.

It was known to your committee before reaching Bucyrus that a serious disagreement had developed between the city and the owners of the works. Into this case we do not propose to enter except so far as to state the facts which bear upon our investigations. The claim is made by the city that the contract calls for pure water, and this the company is not furnishing at the present time. For this, and perhaps other reasons, the sum of five thousand dollars, supposed to be due the company for services rendered during the past year, has not been paid. It is also claimed by many citizens that an abundant supply of pure spring water can be had, to take the place of the river water, and this at no great cost. The answer to this charge as made to us by the officer of the company is, that the water is reasonably pure under ordinary stages of the river and is filtered; and that the company will pay liberally for any available supply that may be found, other than the present, so soon as assured that the supply is ample and of accepted purity. The further statement is made by the company, that having spent many thousands of dollars in investigations in and about the city, and having little or no faith in the reported supplies, it is not right to throw all the cost of further investigations on the company.

The water question is the most important one that can command the thought and time of the people of any municipality. When we remember that three-fourths of the human body is water; that a like proportion of every article of food that enters the body is water, that water is the carrier of many of the most violent diseases that afflict our race; and that it is the sole carrier of typhoid fever and cholera, we do not wonder that our towns and cities are giving the question of a water supply the most careful consideration. Still further it is evident that the supply of water within reach is limited, while the demand is constantly increasing, and far more rapidly than the increase in population. We can not but commend the desire on the part of the people of Bucyrus to obtain an ample supply and at the same time a safe supply.

In a former report, on the condition of the streams passing through the town of Crestline, we had occasion to speak of the nature and amount of the pollution of the Sandusky river at or near its source. It is this stream, which after passing through twelve miles of alluvial valley, furnishes to the people of Bucyrus the present water supply. It is not an ideal stream either at Crestline or along its course through a district of farms and the adjuncts of farms. It will not be ideal until our people learn that a stream of running water is one of the most priceless of heritages. We must learn to dispose of garbage and filth otherwise than by turning it into the nearest body of running water, and watching it start down with the current, away from us but towards our neighbor. No sanitarian would commend without reserve the present water supply of Bucyrus. It is taken from a polluted stream at a distance too short for complete self purification. The English authorities tell us that there is no river in England long enough to purify itself. If that

be true, there is danger from every stream in America, for perhaps none of our rivers escape pollution. Twelve miles are certainly not enough to cure all the ills of a bad water supply. But on the other hand the danger, after a flow of twelve miles, is certainly small under ordinary conditions, and when no epidemic is prevailing in the country. It is undoubtedly far purer than the water in many of the shallow wells of towns the size of Bucyrus. This does not conflict with the statement that it is far from an ideal water supply.

These conditions being admitted, the question remains how can the supply be improved? As already stated, Bugyrus is situated near the head of a number of large rivers. These arise from springs and from marshes. The underground supply of water must be extensive in order to afford the constant flow of the summer months. Such springs a few miles from the town of Crestline, are ample for the wants of that railroad centre. Can other springs of like size and character be found in the neigh. borhood of Bucyrus, and if so what would be the probable character of the water? To the south of the town lie the "plains." These are flat lands fully charged with water. This supply of water is under some pressure, indicating that it has a head on higher ground, and is not stagnant but in motion like the surface waters of the state. Wells dug in the Fair Grounds had a constant artesian flow for many years. So too with the large well belonging to the Toledo and Ohio Central Railway. This well was dug by the company to furnish water for the shops and also for the locomotives. The flow is many thousands of gallons daily, being ample for the requirements of the company. The water is clear and has a pleasant taste, and, without analysis, would be considered potable. Two points, however, must be urged against it. The water has such a degree of hardness as to unfit it for many domestic uses. railroad company has been compelled to abandon its use in locomotives, owing to the heavy scale it produced, and has arranged with the Bucyrus water company for water from the Sandusky river. The other objection is the amount of organic matter likely to be present in the water. The source of the water is such as to suggest an undue amount of organic matter and with that, diseases of a malarial or typhoid These points should be made the subject of careful and scientific investigation.

It has been doubted, by those having some knowledge of the flow of water in this portion of Bucyrus, whether the supply would be at all adequate. The only evidence possible on this point was the reported decline in power of the wells in the Fair Grounds following the digging of the large well by the Toledo Railroad Company. If these are related to each other as cause and effect, it is very doubtful if an abundant, and at the same time a cheap supply could be obtained. The cisterns used by the city for fire protection, in addition to that afforded by the water company, seem to reach the artesian layer and are kept full from that source and without pumping. But it must be remembered that the amount drawn from these cisterns would bear no relation to the amount required daily, and every day, by a growing city.

To the north of the city there is a slight elevation which is underlaid with water bearing sands. The location seems to suggest water of purity and in large quantity. The same may be said for property to the east, belonging to Mr. Chas. Ludwig and others. Springs abound in such numbers as lead one to think that it would not be a great task for an engineer to locate the true head and dig out the fountains.

The city of Bucyrus has had a large and varied experience with the gas and oil problems. No less than nine wells, if we remember correctly, have been dug to varying depths, in some instances to two thousand feet and more. These have been dug to the north, northeast and south, or on three sides of the city, but without finding a general supply in any case.

The geological conditions are not such as to indicate success in this direction. We have the data from the "Ohio" gas well as reported by the engineer in charge. The series of rock-masses is as follows:

Drift	29 f	eet.
Grey shale	131	"
Limestone	808	**
Grey shale	70	66
Limestone		
Red-rock	40	66
Grey shale	708	46
Black shale	320	66
Limestone	119	"
Total	2264 f	eet.

The drift, twenty-nine feet, is too shallow to be a safe source of water. Shale is rarely, if ever, water-bearing. It is more frequently the impervious layer above or below the sands which contains a storage of water. If correctly reported, this shale rests on the massive limestone. No water-bearing sands are to be found in the entire series. If this well is a fair example of the nine, there are but faint hopes of obtaining a supply by means of deep wells.

We, then, from the short and imperfect survey made by us in the time at our command, do not feel warranted in advising spending sums of money in deep explorations. The two possible sources are the Sandusky river as at present and the surface springs or "plains." The last source should be given, as we have already stated, a long and careful investigation, not simply as to the supply of water, but its character and purity.

What can be done before such an ideal supply can be found?

The filtration of the present supply can be greatly improved, either by increasing the number of filters so that it will not be necessary to force the work at so great a speed, or by changing the plan of filtration. The water furnished to the people of London, England, is as clear as spring water though taken from the Thames river. By the terms of the contract between the companies and the people, the water must be so clear that it does not appear cloudy when seen through a mass thirty inches in depth, and held between the observer and sunlight. The filtering is done in large open beds covering acres of surface. The beds are cleaned by the removal of the upper films of sand every day or two as required by the condition of the water to be filtered.

The Sandusky river must be kept from further pollution, and constant efforts put forth to reduce actual pollution to the lowest point. The people are being interested as never before in matters of health and water supply. There is, therefore, reason to hope that public spirit will assist in reducing the danger. This year the city of Canton has taken an advanced step that will be an object lesson for the whole country. It has decided that since it objects to having a polluted stream pass its door, it will not pollute the stream for the towns below. A sewage farm with all the modern methods for the treatment of sewage on a large scale, will be put in operation. It will be a blessing to Canton, and to all the state.

Let us aid in the great work of reform.

We cannot close this long statement without expressing our thanks to all the parties with whom we came in contact. Each seemed anxious that we should learn all the facts and nothing but the facts. Where there was difference of opinion, the difference was stated pleasantly and with a seeming desire to get at all the facts in the case. Whether there is or is not a sufficient supply of good water in the ground around and about the town can only be ascertained by the most painstaking investigation. We commend the matter to the attention of the entire board.

# REPORT ON THE WATER SUPPLY OF LIMA..

BY B. STANTON, R. D. KAHLE AND C. O. PROBST, COMMITTEE.

Mr. President: Your committee appointed to inspect the water-works of Lima, beg to submit the following report:

The committee visited Lima on March 25, 1893, and in company with the mayor of the city, the health officer and several members of the board of health, spent the entire day in looking over the present water supply of Lima, and in search of new or additional supplies. As descriptive of the water-works, and the conditions affecting the water supply in November, 1891, we quote from a report on the sewerage and water supply of Lima, published on page 21 of the seventh annual report of the Ohio State Board of Health:

"The city built water-works in 1887, the source of supply being a small creek which flows only in wet weather. This creek is impounded in a reservoir six acres in area and eight and a half feet deep at the center with shallow margins and a bottom of natural earth. Water from the impounding reservoir is delivered by gravity to a storage reservoir about half a mile distant. This reservoir covers twenty-one acres and is eighteen feet deep with natural earth bottom. Water is pumped direct to consumers. The drought of last summer cut off all supply from the impounding reservoir, and an auxiliary pump was placed on the bank of the Ottawa river, and water was pumped from the river to the storage reservoir.

"The infirmary is about two miles from Lima, and is located on an elevation about five hundred yards from the river. Kitchen slops, laundry and bath slops and other liquid wastes are conveyed from the building by an eight-inch sewer to an open drain, which carries water from a small spring that flows most of the year.

"A branch of this sewer connects with the privy vaults, which are placed back of the buildings. The open drain flows across a broad meadow and empties into Ottawa river about a mile and a half above the auxiliary pumping station of Lima. An average of 100 persons use the infirmary sewer, and about one-half the flow of the open drain is sewage. As nearly as could be calculated without measurement, the flow of the drain was equal to one-half the flow of the river where the drain empties into it. About one-half mile further down the stream, and one mile from the pumping station, a sewer from the children's home also empties into the river. This institution contains on an average fifty persons, and all liquid wastes from it, including contents of privy vaults, drain into the river.

"The majority of the people of Lima depend on the public water supply; and the wells in most parts of the town are polluted."

There have been no changes in the water supply since the above report was made. Up to January 28th of this year, water was pumped from the Ottawa river into the storage reservoir.

The river, which we forded at one point, was eighteen to twenty feet wide, and two or two and one-half feet deep where forded. A visit was made to the infirmary and children's home, and it was found that the sewage from both institutions still empties into Ottawa river.

The location of the children's home will be changed in a short time, we were informed, which will remove this source of pollution. Your committee is of the opinion that the present water supply of Lima is far from a satisfactory one. The use of the Ottawa river, so long as the sewage of the infirmary and children's home is emptied into it, is attended with absolute danger, and especially in dry weather, when the river is so greatly reduced in size. Loss creek, from which the supply ordinarily is taken, drains a rich farm land, and is doubtless polluted by barn-yard washings, and possibly the drainage from privies; and the chemical and biological examinations of the water from the reservoir previously made show it to be polluted. But as the storage reservoir will not contain sufficient water for a summer's supply, Ottawa river must again be resorted to unless additional supplies can be obtained elsewhere.

With this end in view a visit was made to an artesian well, which is flowing, located about one and one-fourth miles from the storage reservoir. This is the well from which samples were collected for analysis in November, 1891. As will be seen by the report on Lima's water supply to which reference has been made, the analysis of samples collected November 7, 1891, indicated an organically polluted water, the bacteriological examination agreeing with the chemical analysis. This result is entirely unexplainable, except on the ground that the samples were polluted after collection. A second examination was made of samples collected December 1, 1891, and the result was entirely different, indicating a water entirely free from pollution, and absolutely free from bacteria. This water is very hard and might be objectionable on this account, unless artificially softened. It also contains sulphur.

A visit was made to the Solar Oil Refinery Company, located just beyond the limits of Lima. Here we found three wells sixteen to eighteen feet in diameter and 160 feet deep. One well furnishes nearly 500 barrels per hour, and the other wells about the same amount.

The water is clear, containing sixty-eight grains of lime per English gallon. The water also contains sulphureted hydrogen, imparting the taste and odor of sulphur; this soon disappears, however, on allowing the water to stand. For boiler purposes it is necessary to treat this water to precipitate the lime. This is expensive, and the company purposes to construct a reservoir for storing surface water. Mr. J. W. Van Dyke, manager of the works, informed us that in prospecting for a water supply, a large deposit of water-bearing sand and gravel was found about two miles from Lima. It was feared the supply would not be sufficient, and that wells on adjoining farms would be pumped dry. The expense of pumping was also an objection. About six miles from Lima another and larger deposit of sand and gravel was found, which afforded a prospect for obtaining a large supply of water.

Your committee has the following recommendations to offer:

As there is great probability that it may become necessary to obtain water from Ottawa river again this summer, steps should be taken at once to exclude from the river the sewage from the county infirmary and children's home, if the latter is not removed, and as far as possible prevent other sources of contamination of this stream.

A thorough and systematic inspection should be made of the entire water-shed of Loss creek, and measures instituted to prevent objectionable drainage into it. Special attention should be paid to privies, privy vaults, or other sources of fecal pollution of Loss creek. It must be borne in mind that the stools from a single case of typhoid fever or cholera washed into this creek, might give rise to an epidemic of the disease, affecting hundreds.

Attention is called to the recent act of the New York legislature, by which the authorities of New York City have been given absolute power to remove all sources of pollution found on the water-shed of the Croton river; this work is now

being rapidly pushed.

Section 2433 of the Revised Statutes of Ohio, provides that "The jurisdiction of any corporation owning water-works, to prevent or punish any pollution of the water, shall extend ten miles beyond corporation limits." The water-sheds of both Loss creek and Ottawa river, for at least this distance, should be carefully inspected, and all sources of pollution removed at the earliest possible date. No effort should be spared to secure a water supply which will be permanently free from the danger of pollution, and we would therefore recommend that an experienced engineer should be employed by the city to carefully determine the possibility of securing such a supply. If it should be found that no other source of water supply is available, the question of increasing the capacity for storage of the present supply, and the purification of the water before delivery to consumers should be given early consideration.

The following is a report of an examination of the hydrant water from Lima, and of the well water at the works of the Solar Refining Company:

THE SOLAR REFINING COMPANY,
LIMA, OHIO, April 17, 1893.

DR. R. D. KAHLE, Member State Board of Health, Lima, Ohio:

DEAR SIR: I inclose herewith an analysis of the Lima city water. This sample was taken from a hydrant on April 13, 1893.

Regarding the deep well water, it is my opinion that the small amount of hydrogen sulphide which it contains would disappear on exposure to the air, and the remainder oxidizing and depositing its sulphur.

I send the analysis of the mineral constituents of the well water as found at the pumps of the Solar Refining Company.

Very truly yours,

(Signed)

C. J. ROBINSON.

LIMA, OHIO, April 17, 1893.

Analysis of Lima city water. Sample taken April 13, 1893.

	per 100,000.
Total solids dried at 110° C	45.7
Total solids ignited	34.3
Chlorine	17.8
Free ammonia	
Albuminoid ammonia	

Lima, Оню, April 17, 1893.

Analysis of mineral constituents in deep well water from Solar Refining Company's wells.

	Parts per 100 000.
Calcium sulphate	45.1
Magnesium sulphate	20.7
Magnesium carbonate	12.1
Sodium chloride	2.3
Total	80,2

(Signed)

Respectfully submitted,

(Signed)

REPORT OF AN INVESTIGATION OF THE WATER SUPPLY OF PIQUA.

BY THOS. C. HOOVER, COMMITTEE.

To the State Board of Health:

In accordance with instructions, I went to Piqua on July 6th to investigate the conditions complained of, and respectfully submit the following report:

Piqua is a town of 12,000 inhabitants, built along the Miami river in the northern part of Miami county. The surface is rolling, the soil a rich loam with a gravelly subsoil. It is superabundantly supplied with shade trees of luxurious growth.

The Miami canal a so passes through the town. About three hundred yards southeast of the main street the river is dammed, and the result is a large body of water over which the Main street bridge is constructed. The only public sewer is about three-quarters of a mile long, and with its few branches accommodates only a small portion of the town, the remainder being dependent upon surface drainage. A private sewer used by about eleven families, is emptied into the dam before mentioned. I should have said that the main sewer empties into the river at the lower part of the town. The town is compactly built, and is an old one. The older privy vaults are not cemented, but the more recently constructed ones are. These vaults are not flushed, but are cleaned as often as is necessary.

Sidney, Shelby county, is located on the same canal, about twelve miles north, and has about 5,000 inhabitants. All the sewage is emptied into the canal. Lockington is six miles north of Piqua, has about 400 population, but it is said there is no contamination of the canal at that point.

The public water supply of Piqua is taken from the canal at Lockington by trench or sluiceway, and carried to a natural reservoir of about forty-four acres; thence through another sluiceway to a second natural reservoir of about eleven acres; thence through a third sluiceway to a smaller reservoir of about three acres from which it is pumped to the consumers. This smaller reservoir has a profuse growth of grass which was being cut and a portion was floating in the water. The public water supply is utilized by the manufactories, and very little comparatively by the families. The largest proportion of the private supply is from private wells in the town.

Typhoid fever is common in the town, but not constantly prevalent. At this time there are about five cases of diphtheria in all the stages of the disease. Since the 15th of last October there have been, including the five cases mentioned, 100 cases and twenty-two deaths. Below are given the results of the chemical examination of samples of water collected by the health officer of Piqua.

As my time was very short, this is all I am able to report, and would respectfully ask that further time be granted, and that the secretary be added to the committee. I think from what I have reported, it will be seen that the conditions are not what they should be, and that the most thorough investigation should be made.

#### CHEMICAL EXAMINATION.

STARLING MEDICAL COLLEGE, COLUMBUS, OHIO, August 17, 1893.

DR. C. O. PROBST, Secretary Ohio State Board of Health:

DEAR SIR: Following are the results of the examination of four samples of water from Piqua, O. The samples were labeled, No. 1, No. 2, No. 3 and No. 4, and I have no further knowledge of their source except that they are from the canal.

## PARTS PER 100.000.

	Free ammonia.	Albuminoid ammonia.	Oxygen required.	Nitrous acid.	Chlorine.	Total so!ids.
No. 1	.035	.066	1.14	.001	.31	22.8
No. 2	.035	.066	1.12	.001	.28	23.0
No. 3	.28	.40	1.06	.001	.28	23.4
No. 4	.015	.32	.96	.001	.30	23.2

With the preliminary statement that I am unaware of the relations which these samples bear to each other, I may make the following explanation of the results obtained from a chemical analysis of the waters. In the first place, the nearly constant quantity of nitrous acid, chlorine and total solids present, the mineral constit-

uents (within the range of errors of analysis) indicate that the samples are of the same The difference in kind of water as far as the mineral constituents are concerned. the organic constituents, the free and albuminoid ammonias and oxygen required, indicate that these samples are exposed to different degrees of contamination, or rather have been taken from different places at which the amount o' contamination differs. The figures obtained of these last named constituents are entirely too high to be consistent with a good water and indicate a very high degree of contamination of the water with nitrogenous organic substances in a state of decomposition. The low chlorine which accompanies these high figures indicates that this contamination is not directly of animal excreta, such as would be found in a shallow well in communication with the contents of a vault. The readings for free and albuminoid ammonia in No. 1 and No. 2 were exactly the same, and the oxygen required in these two agreed very closely so that these waters, whatever their sources, are practically identical. These figures are considerably reduced in No. 3, and still further in No. 4, showing that No. 3 is a somewhat better water than No. 1 and No. 2, and that No. 4 is further improved, though still bad. These differences are quite clearly marked, and when examined in connection with the surroundings of the waters, will doubtless be fully explained. I may again be permitted to state that none of these samples have the degree of purity that should be required in a public or private water supply.

Respectfully submitted,

CURTIS C. HOWARD.

#### SOURCE OF SAMPLES.

No. 1-From basin at Lockport.

No. 2-From Swift run pond.

No. 3—From head gates at the pump house.

No. 4—From hydrant in Piqua.

# REPORT ON THE POLLUTION OF THE SANDUSKY RIVER BY WASTE FROM STRAW-BOARD WORKS AT TIFFIN.

### BY THE SECRETARY.

A communication was received from the health officer of Tiffin, stating that the waste from the straw-board works at that place had killed a number of fish in the Sandusky river below Tiffin, and wanting to know if the state board of health had authority to abate the nuisance. A day or two later a telegram was received from the health officer of Fremout, requesting me to come there at once and investigate the condition of the Sandusky river.

I went to Fremont on August 2d, and in company with the health officer, several members of the board of health, and representatives of the press, drove along the Sandusky river from Fremont to Tiffin

At Ft. Seneca, which is about ten miles from Tiffin, we were met by the township board of health, the Hon. Mr. Flumerfelt, representative from Seneca county, and a large number of farmers living in the neighborhood. Here we inspected the river and found hundreds of dead fish of all kinds and sizes, lining the banks and stranded on the rocks. The river was very low, and might have been forded dry shod. The decomposing fish emitted considerable odor, said to be much worse at night and early morning. Residents of Ft. Seneca, which is at least a half mile from the river, testified that there were times when it was impossible to keep the doors and windows of their houses open on account of the stench.

A short distance above Ft. Seneca there is a dam, a bridge crossing the river at this point. A large number of dead fish were collected here. Dead fish were found all along the river to within a short distance below the straw-board works.

Arriving at Tiffin, we called first on Dr. Bridinger, health officer. From him it was learned that the straw-board works were located outside the city limits, and beyond the jurisdiction of the Tiffin board of health. We next called on Mr. Stroh, the prosecuting attorney. He informed us, that two years ago, similar troubles having arisen, an indictment by grand jury was secured against the straw-board company and the case was tried in Tiffin before the common pleas court. Suit was brought for violation of section 6921 R. S, which provides that "Whoever corrupts or renders unwholesome or impure any water course, stream or water, shall be fined not more than five hundred dollars." The verdict was against the plaintiff, principally on the ground, as nearly as I could judge, that it was not proved that it was the waste from the straw-board works that rendered the stream impure or killed the fish. Prof. Howard, of Columbus, was witness for the defense, and it would seem that the prosecution placed too much reliance on chemical proof of pollution of the river.

The manager of the straw-board works was summoned, and questioned in regard to a report that the works would soon be closed. He stated that he had received orders to close the works as soon as stock on hand was worked up, which would be in a day or two. This was Thursday, and the works closed on the following Saturday, thus temporarily abating the nuisance.

I should have stated, that the township trustees agreed to have the dead fish removed from the river and buried at once.

I spent Friday forenoon examining the process of straw-board manufacture. The works are extensive, and for some years have been operated by a straw-board syndicate, which has an invested capital of over five millions of dollars in this state.

In the manufacture of straw-board the straw is first macerated in strong lime water for a considerable time in large globes heated by steam, revolved by cogs and fitted with inside arms which keep the straw in motion. The pulp which results, is received in large wooden vats where it is continuously washed, the waste water carrying dirt and fine bits of straw passing through a revolving screen of fine wire cloth. The screens become coated with a glutinous matter in the pulp which is removed by muriatic acid applied with a woolen swab. This is the only purpose for which acid is used. The water which washes the pulp, and which carries a certain amount of it away, is the waste which enters the river. About two million gallons of water are used daily in the works at Tiffin, and when I was there they were practically, passing the whole of Sandusky river through the straw-board works. The prepared pulp is received by an endless belt of woolen cloth passing between steel rolls, and finally caried on another belting between steam heated rolls which dry it. A portion of the pulp is ground to a finer substance, and this is coated over the outside surfaces of the straw-board.

On going to the river where the waste is discharged large collections of fine straw pulp were found below the surface of the water and lining the bed of the river A dam just below the straw-board works affords a considerable body of water int. which the waste is discharged. On gathering up a handful of the pulp it appeared identical, and was so pronounced by the manager, with the fine pulp used for coating the outside of the straw-board. It would seem that this waste would be worth saving, and I requested the manager to collect a barrel of water and weigh the solid matter it contained. This he promised to do and report results.

This pollution of the Sandusky river is a serious matter for the city of Fremont. The water of Fremont is obtained from an artificial pond located on the banks of the Sandusky river. The water is supposed to come from the river by filtering through the bank, but doubtless much of it is intercepted ground water. When the river is very low, however, it is necessary to draw directly from the river, and this

was the case when I was there. As dead fish were found along the river nearly as far down as Fremont, the water supply must have been grossly polluted during this summer.

However, such pollution is probably not the most dangerous to which the water supply of Fremont is subjected; all the sewage of Tiffin enters the Sandusky river, and the time when this stream is lowest and contamination is greatest, corresponds with the time when Fremont must depend wholly on the river for its water supply.

Dr. Bemis, health officer of Fremont, informed me that the question of a new water supply was being agitated, and requested me to write him a letter that he cou'd use privately with council in furtherance of such a change. Accordingly I sent him the following communication:

August 26, 1893.

DR. J. D. BEMIS, H. O., Fremont, Ohio:

DEAR DOCTOR: Since visiting your city on the occasion of the investigation of the pollution of the Sandusky river I have been almost constantly from home. I intended on leaving Fremont, and will do so now, to direct attention to the water supply of your city.

Apparently your people were most alarmed over the straw-board pollution of the river, from which, in dry weather, your water supply is directly taken. Undoubtedly water polluted with thousands of decaying fish is highly dangerous to the health of your people, affording as it does conditions favorable for the most luxuriant growth of disease germs which may gain access to the river, in addition to lowering the vitality of users of the water. But I do not consider this the most dangerous pollution of your water supply. The Sandusky river receives all the sewage of the rapidly growing city of Tiffin, and the distance the river has to flow before reaching Fremont affords no assurance that any considerable amount of purification will have taken place by the time consumers receive the water. The conditions must grow worse, for the volume of Tiffin's sewage will increase, while the dry weather flow of the river will probably decrease from year to year.

The health of your city must in time seriously suffer from the use of such a badly polluted water supply, while an epidemic of typhoid fever or cholera in Tiffin would almost inevitably result in an outbreak of the disease in your city. As guardians of the public health your board should protest against the use of such water and endeavor to secure a better supply.

I do not think it desirable, at this time, to call public attention to the fact that Fremont is an undesirable city in which to live on account of its impure water supply, but will ask you to use this communication as you deem best for the sanitary interests of your city. I will, however, report upon this matter at the next meeting of the State Board of Health, which will occur in October, and if any steps have been taken by that time looking towards the introduction of a purer water supply, I shall be pleased to indicate the nature of the same to the Board. If no steps are taken by your authorities to remedy present conditions, I think it quite possible that this Board will feel called upon to officially and publicly condemn the water supply of your city.

Trusting that your efforts in the interest of public health may be crowned with success, I am

Very truly yours,

C. O. PROBST, Secretary.

## REPORT ON DISPOSAL OF GARBAGE AT DETROIT.

## BY THE SECRETARY.

Returning from the cholera conference at Ann Arbor, Michigan, Dr. Wise and myself stopped one day at Detroit and investigated the system of collection and disposal of garbage practiced in that city. Through the courtesy of Mr. Chamberlain, the contractor for the collection and removal of garbage, we were able to inspect the whole system.

There is a daily removal of garbage from houses in the populous part of the city, and a twice-daily removal from hotels and restaurants. The garbage is placed in steel boxes about three feet wide, two and a half feet deep and ten feet long. These are hauled on one horse wagons to a central depot in the city, and are lifted from the wagons by block and tackle to a truck railroad car. From fifty to sixty of these wagons are used for collecting the garbage.

There was some odor about the central depot, due to the decomposing garbage held on the car, but this was not great, and not nearly so potent as odors from a soap factory near by. It may be remarked that the disposal works were formerly located at this point, and that the odors produced led the householders in that neighborhood to get out an injunction against the disposal of garbage at that place. The company was finally obliged to move the works from the city, and they were located about thirty miles out, along the line of the Michigan Central R. R.

From fifty to sixty tons of garbage are collected daily and are removed, usually at night, to the disposal works. When the garbage reaches the works it is spread out on a sloping floor to drain, and cans and large objects are removed. The garbage is then placed in large steel cylinders, made with an outer and inner shell between which steam is admitted. The cylinders revolve, the garbage being stirred by inside arms.

The garbage contains from seventy-five to eighty per cent. of water and about eighty to ninety per cent. of this is driven off, in the form of steam. This steam is condensed, the resulting water being without odor, is admitted to a small stream. An exceedingly offensive gas is produced, however, and this is conducted to the boiler fires, most of it being burned.

The dried garbage is next transferred to large tanks containing steam coils at the bottom, and large quantities of benzine poured onto it. The benzine is vaporized by the heat, condensed and sent through the garbage again and again until all the grease has been extracted; pipes from the tanks conducting the grease or oil to large barrels. The garbage is then carried to the floor of the sorting room, where much of the inorganic and some of the organic matter, such as banana stems, etc., is removed. It is then run through a mill where it is ground into coarse powder, and is sacked for shipment. It is now being sold to a fertilizer company, which mixes the powdered garbage with various kinds of fertilizer. The grease is sold to soap works. Only a few dead animals are received, which are also utilized for grease and fertilizer, by a slightly different and separate process. No night soil is received.

Mr. Chamberlain's company has a three year's contract with the city of Detroit for collecting and removing all garbage, the price being \$51,500 per annum. A rebate is made to the city, and the company pays the salaries of two special policemen, who look after garbage on the property, so that there is left net about \$48,000 a year. About seventy employes are engaged in the work of collecting the garbage. We were informed by Mr. Chamberlain that it cost \$48,000 a year to collect and deliver the garbage to the city depot.

The disposal works cost \$150,000, and about thirty employes are engaged the: **e** The hauling of the garbage to the works, operating expenses, interest on investment and profits are derived wholly from the garbage.

At present the company realizes about four dollars per ton on the garbage. The greatest item of expense connected with the disposal of the garbage is in evaporating the contained water. By a new process, for which patents have been obtained the wet garbage will be treated with benzine prior to drying. All of the grease and forty per cent, of the water, it is expected, will be removed by the benzine. The garbage will then be dried and powdered as before. This will reduce the cost of disposal nearly one-half, and will permit of the system being used in cities of 25,000 inhabitants. At present it is only profitable in large cities.

The advantages of this system, which is known as the Mertz system, are two—1st. The contractor is interested in collecting the greatest possible amount of garbage. 2d. An important industry is maintained by utilizing the garbage.

I have for exhibit a sample of the treated garbage, as ready for shipment, obtained at the works.

## REPORT ON SEWAGE DISPOSAL AT FOSTORIA.

BY R. D. KAHLE AND C. O. PROBST, COMMITTEE.

MR. PRESIDENT: It will be remembered that a petition was presented at the last meeting of the board, from residents of West Mill Grove, setting forth that the city of Fostoria was preparing to discharge its sewage into a small stream which flows through said village, and as the stream is often practically dry in summer, it was feared a serious nuisance would be created.

Your committee appointed to investigate the matter visited Fostoria May 24te, and in company with the mayor, health officer, and members of the board of health, inspected the line of sewer already built and the proposed outlet. In the afternoon we met the city engineer, Mr. J. P. Force, and were shown the plans and specifications of sewers already built, and of those contemplated.

Sewer district No. 2 is completed. It comprises 5.48 miles of pipe sewer, 1.33 miles of brick sewer and 4.10 miles of sub-drain for soil drainage. In this district there are 102 man-holes, which amply provide for ventilation; 139 catch basins and 5 automatic flush tanks of the Van Vranken pattern.

The total cost of construction, including engineering and inspection, was \$71,604.12.

The sewers were in good condition; and it was reported that the sub-drains had considerably lowered the subsoil water, which will undoubtedly be of great benefit to the health of the people.

Sewer district No. I is not yet completed, but the work is being rapidly pushed. The outlet of this district is below the level of the stream into which it discharges, so that a pump is operated to drain the work at the outlet during construction. The original plans contemplated straightening the stream at this point, so as to discharge the sewage by gravity. The question of right of way is now in the courts.

Sewer district No. 2 discharges into the same stream higher up and nearer the city. It is proposed to construct a dry weather sewer which will intercept the dry weather flow of this district and conduct it to the stream at the point where sewer district No. 1 discharges.

In regard to the pollution of this stream, the plans contemplate ultimately the purification of the sewage either by intermittent filtration, for which purpose a sufficient amount of land has already been purchased, or by precipitation. The location of the outlet is favorable for either plan.

Your committee is therefore of the opinion that there is no occasion for further action to be taken by this board at the present time.

While in Fostoria we took occasion to examine the public water supply.

A report on the proposed water supply of Fostoria will be found in the 5th annual report of this board, which was made by the secretary in June, 1890, when the work was partly completed. It may be said, in brief, that a collecting reservoir

is filled from a small stream, which is practically dry in warm weather, the water being conducted to a storage reservoir of one hundred and twenty million gallons capacity, sufficient for three months' supply. This reservoir is near the pumping station, the bottom of the reservoir being above the level of the pumps. Between the pumps and the reservoir is placed a circular filter 100 feet in diameter. It is composed of layers of broken stone, gravel and sand. By a valve, water is released from the reservoir into a pipe in the center of the filter bed, the water rising in a spray to a height of eight to ten feet, falling onto the filter bed. The water passing through the filter enters a well and is pumped direct to consumers. A standpipe at the pump-honse is also filled, and can supply the city while the filter is being cleaned. This has not often been done.

In order to determine the degree of purification, if any, attained by this æration and filtration of the water, two samples were collected, one from the reservoir and the other from a hydrant at the pumping station, representing filtered and unfiltered water.

These were submitted to Prof. Howard who made the following report:

## DR. C. O. PROBST, Secretary State Board of Health:

DEAR SIR: The samples of filtered and unfiltered water from Fostoria have been examined by me with the following results:

#### UNFILTERD.

Free * ammonia. .008	Album, ammonia. .031	Oxygen required. .45	Nitrous acid. .001	Chlorine.	Tot s 1id 18.4	ls.
		FILT	ERED. "			
.010	.30	.47	.001	.35	19.0	)

In answer to the question as to the effect of filtration on the first sample, which I understand is the primary object of this investigation, I am obliged to say that the differences in results fall within the range of error of the methods, except in the case of free ammonia, which is higher in the second than in the first sample. It will be noticed that the reverse is true of the albuminoid ammonia. Possibly the action of the filter tends to convert the nitrogen existing in albuminoids into ammonia. No reliable inferences can be drawn from the slight variations in the other constituents. As regards the quality of this water, I have not been advised of the nature of its source, but presume from its analysis that it is from a stream or river. If so, the contamination is rather greater than ought to exist in a water that is used for drinking purposes, and, as before stated, the filter appears to be of no value in improving the quality of the water.

Yours truly, (Signed) Curtis C. Howard.

It would be interesting to know what effect the filtration has on the bacteria contained in the unfiltered water, and your committee recommends that a bacteriological examination of the water be made.

# REPORT OF COMMITTEE ON THE SEWERAGE AND WATER SUPPLY OF THE EPILEPTIC HOSPITAL AT GALLIPOLIS.

Application was made by Dr. H. C. Rutter, manager of the Epileptic hospital, now building at Gallipolis, for the examination and approval of the plans for sewerage and water supply of that institution.

The application being referred to the president, Dr. Hoover, Dr. Kahle and the secretary were appointed a committee to visit the hospital and pass upon the plans.

Accordingly the committee, accompanied by Dr. Rutter, Mr. C. C. Waite, president of the board of hospital managers, and Mr. Yost, who is engaged as architect, visited the hospital and spent the day in examining plans and location. A consultation was held with the mayor of Gallipolis, and with the members of council appointed as a committee on sewers.

It appeared that the city of Gallipolis had agreed to construct water-works and a sewerage system, and to furnish water to the hospital and an outlet for the sewage of the institution. The question of issuing bonds for water-works had been approved by the vote of the people of Gallipolis, but the financial stringency had restrained them from offering the bonds in the market. We were assured by the Gallipolis authorities that the water-works would be built as soon as the bonds could be sold. Plans have been made for a system of sewerage, which it was stated would certainly be constructed, and which will afford an outlet for the institution.

There appeared to be some question as to the proportion of the expense that should be borne by the state, but there was no reason to believe that this would not be satisfactorily settled. The committee formed the opinion, however, that it would probably be some time before the hospital could avail itself of these promised improvements.

For a temporary water supply, three tubular wells six inches in diameter and about ninety feet deep, were sunk on the grounds. The soil is sand and gravel with no impervious layer above. Two uncemented privy vaults were found on the grounds but at a considerable distance from the wells. Neither the quantity nor quality of the water supply had been tested. The hospital authorities agreed to furnish samples for chemical and biological examinations.

It was proposed to empty the sewage temporarily into a small run a short distance above the institution. The run enters the Ohio river about half a mile from the hospital and about a mile above the central portion of the city of Gallipolis, but below the point where the water-works will be located. This run extends through farm land at a considerable distance from any occupied dwelling. The run, except near its mouth, was entirely dry at the time of our inspection.

It should be stated that several cottages were nearly ready for occupancy, so that it was necessary, unless the opening of the institution was unwarrantably delayed, to adopt some temporary plans for sewerage and water supply. The following report was adopted by the committee and presented to the board of trustees:

## To the Board of Trustees, Epileptic Hospital, Gallipolis, Ohio.

GENTLEMEN: Having had the plans for the proposed water supply and sewerage system of the Hospital for Epileptics submitted to the undersigned committee of the State Board of Health, we respectfully present the following report:

The water supply, which is to be from driven wells, is approved, subject to chemical and biological examination, which will be made as soon as samples are furnished.

The sewerage system which is to be a part of the general system of the city of Gallipolis, about to be constructed, is also approved.

We find, however, that temporarily it will be necessary to dispose of the sewage in some other way, and it is proposed to empty it into Mill creek near the hospital grounds, said creek emptying into the Ohio river above the city. This proposition we also approve, but with the distinct understanding that this is to be a temporary expedient, justified only because of the delay which would otherwise occur in opening the institution, and that connection will be made with the sewerage system of Gallipolis within one year.

We would further stipulate, in connection with the water supply, that all privy vaults on the hospital grounds shall be cleaned and filled and that no others shall be constructed.

(Signed)

THOS. C. HOOVER,
R. D. KAHLE,
C. O. PROBST,

Committee.

INVESTIGATION OF SEWERAGE SYSTEM AT SPENCERVILLE.

BY DR. R. D. KAHLE, COMMITTEE.

To the State Board of Health:

As per your instructions, I visited Spencerville on May 4th, and in company with Dr. J. C. Pence, health officer, and a member of the local board of health, viewed the sewerage system of that village.

There is a 16-inch sewer, which has recently been constructed, running through the main street and is probably a little more than one-half mile in length. This sewer empties into a small brook about two hundred feet from where the brook empties into the Miami and Erie canal, which it does just below a lock. The hotel, the Keeth House, had a private sewer leading from the hotel to the same brook, emptying into this stream about seventy-five feet nearer the canal. This private sewer became stopped, causing the basement of the hotel to be overflowed with sewage from the water closets and kitchen.

The local board of health declared this a nuisance and demanded that it be remedied, but the proprietor was unable to make any connection as his private sewer ran through private property, which he was not allowed to disturb, and he was not allowed to tap the village sewer; thus it w s that the State Board of Health was called upon.

In the meantime council came to the rescue by passing an ordinance permitting water closets to be connected with the town sewer where there is water connection with the closet, thus allowing the sewage from the business portion of the town to empty into the canal.

By running this sewer about three-fourths of a mile further it would empty into an overflow of the canal, thus avoiding this source of pollution to the canal. There are a number of cesspools near the mouth of this sewer which should be abated.

#### REPORT ON SEWAGE DISPOSAL AT WARREN COUNTY INFIRMARY.

BY B. STANTON AND C. O. PROBST, COMMITTEE.

MR. PRESIDENT: <sup>6</sup> At the request of the board of health of Lebanon and the directors of the Warren county infirmary, your committee made an investigation of the disposal of sewage of that institution.

The infirmary is situated a short distance beyond the corporate limits of Lebanon. The buildings consist of one large central and two detached brick buildings for the insane. There is also a separate small frame building for a hospital for infectious diseases.

Bath, laundry and kitchen wastes are discharged into a short sewer which receives the excrement from water-closets in the buildings for the insane. The sewage passes through an open drain under the building for insane males, and thence to a small stream that flows through a considerable portion of the corporation of Lebanon.

There are no water-closets in the main building, and all the inmates, except the insane, deposit their excreta in privies built over a small run which empties a short distance further on into the stream aforementioned.

The privies and walks leading thereto, are divided by a single board partition, one-half being used by the males, the other by females. This arrangement is condemned by your committee for other than sanitary reasons which are apparent. The privies are probably as well kept as they could be.

The stream into which the sewage from the infirmary is discharged is quite small, and in dry weather is said to contain but little water. About a half or three-quarters of a mile below the infirmary it is obstructed by a dam forming a pond from which ice was cut last winter.

The pollution of this stream has occasioned a nuisance in the village of Lebanon, and the attention of the infirmary directors and county commissioners having been called to the matter, it was agreed to make proper changes.

Your committee met, at the infirmary, Mr. A. D. Smith, one of the directors, who has given the question of disposal of night-soil at the institution considerable attention. Your committee recommended the following plan, which is, in the main, the proposed by Mr. Smith, viz.: To build a privy two stories high, three feet from the plan main building, connected with it by lattice work. This is to be located where it would be accessible from either the first or second story of the main building, separated for the sexes. The excrement is to be received in a box placed on a cart concealed by doors. Two boxes of oak made water-tight, and rendered non-absorbable by coating with pitch, were to be prepared, so that one could be in use while the other was being emptied and cleaned. Dry pulverized earth was recommended to be used by the inmates, and some one placed in charge to keep the closets in proper condition. Dry earth closets constructed on a similar plan, were also recommended for the insane departments.

It was recommended that the waste water now being run into the stream, be received in a water-tight vault covered and ventilated, with a siphon overflow into agricultural drain-tile laid eighteen inches deep under a plat of ground devoted to a lawn, in accordance with Waring's plan for disposing of house drainage in country houses.

We are indebted to Dr. F. H. Frost, health officer of Lebanon, for many courtesies extended to us during our investigation.

#### EXTENSION OF CEMETERY AT BELLEVILLE.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, July 26, 1893.

To the Cemetery Trustees, Belleville, Ohio:

GENTLEMEN: At your request and also in answer to a petition from numerous residents of your village, the undersigned committee of the State Board of Health visited Belleville on the 11th day of July, 1893, and inspected your cemetery with the view of determining whether its extension would be likely to injuriously effect the health of your citizens.

As to the necessity for enlarging the cemetery at this time, or whether, in such an event, it would be better to establish new grounds at some other place, we do not feel called upon to speak.

A survey of the cemetery revealed the fact that for topographical reasons, it is practically impossible to extend its boundaries in any but an easterly direction; and the only question that can properly come before our committee is whether extending the cemetery some two hundred feet eastward, as contemplated, is liable to be injurious to the health of the citizens of Belleville. To this proposition we answer—No. In our judgment, the grounds may be extended to the distance indicated without jeopardizing the health of your village; but as an extra precaution, we advise that a drain tile with an outlet into the creek to the north, be placed near the eastern boundary of the proposed extension.

Respectfully,

(Signed)

E. T. Nelson, President, C. O. Probst, Secretary, Committee,

INVESTIGATION OF CEMETERY AT BERLIN, HOLMES COUNTY, AND OF THE KENYON MILITARY ACADEMY, AT GAMBIER.

## BY THE SECRETARY.

Complaint was received in regard to the sanitary condition of the Kenyon military academy. This was referred to the board of health of Gambier. The board officially requested me to make an investigation of the institution.

Dr. Wise, who was appointed to investigate the complaint in regard to the extension of the Berlin cemetery, in Holmes county, wrote me that it had involved him in local quarrels, and requested me to go with him to Berlin. As it was possible to make both investigations on one trip, I went to Millersburg, June 24th, and with Dr. Wise, went on that day to Berlin.

We met the clerk of the township, visited the cemetery and learned that the intent of an order limiting the extension of the cemetery, which was made a year ago, had not been violated, the order being defective, however, owing to a mistake in naming the points of the compass. No bodies had been interred nearer to the village than at the time of our first visit. The trustees were endeavoring to buy a small piece of land to the south of the cemetery, and which is towards the village, but this was intended to be used exclusively for a driveway. It will be necessary to secure more land for burial purposes. To the north this would be wholly unobjectionable, except for an alleyway which would have to be included. The trustees favor taking land to the west. This land slopes away from the village, being on the extreme outskirts of the village. This would not bring the burial grounds nearer the dwellings than at present.

We strongly favor abandoning the present cemetery, and establishing a new one further removed from the village. The objections to extending the cemetery in accordance with the original order of the board came mainly from one man, Mr. Hott, who wrote to the board in regard to it. He lives south of the cemetery, and probably not more than 250 yards from the south line. The persons buried nearest to him are of the same name—and presumably relatives. He has himself purchased a lot in the new addition of which he complains. He has consulted a lawyer, he informed us, and proposed to enjoin the trustees from extending the cemetery further west.

We respectfully recommend that the following order be adopted by the board:

To the Trustees of Berlin Township, Holmes County, Ohio:

It is hereby ordered by the State Board of Health that on and after July 1, 1893, no interments shall be made south or east of the present boundaries of Berlin cemetery.

On my way returning to Columbus, I stopped at Gambier, and in company with the health officer, Dr. E. J. Hyatt, inspected the Kenyon Military Academy.

We first visited the slaughter house owned and operated by the institution. It is located on school grounds some six or seven hundred yards from the academy. The house and grounds are exceedingly filthy. There is no water about the place, and a small quantity is carried there to wash slaughtered animals. All blood and offal is run onto a side hill below the house. The lot was covered by all manner of slaughter house refuse, and the odor from house and lot was exceedingly offensive. A man living some distance away complained very much of the bad odors. The hogs are not used for home consumption.

The academy was in fair sanitary condition. The water supply is from a well, which is properly located and protected from surface drainage. Kitchen slops enter a drain which opens about 200 feet from the building, and then flows in a shallow ditch to an artificial lake or pond a short distance away. This should be stopped. Laundry and bath slops are carried by a drain to an open field some distance away, and have caused some complaint. Formerly the water-closets discharged into this drain. These closets are not in the main building and are now seldom used, but are flushed daily. An outside yault has been built some distance from the main building.

I would recommend that the closets in the building be entirely abandoned; that the kitchen slops be emptied into the drain carrying bath and laundry slops. A plentiful supply of water should be provided at the slaughter house, which should have a water tight floor and be thoroughly washed immediately after use. All offal should be received in a water tight cart, and removed and buried as soon as slaughtering is completed. All heads, bones, etc., which create odor in decomposing, should be promptly removed. The yard should be thoroughly cleaned and feeding offal to hogs should be prohibited.

## REPORT ON A NUISANCE AT COSHOCTON.

#### BY THE SECRETARY.

A communication was received from the police judge and acting mayor of Coshocton, Mr. D. H. Mortley, reporting that the board of health was having trouble on account of a cesspool used by the Park Hotel, which caused a serious nuisance, and requesting me to come there at once to advise the board of health how to abate the nuisance and suggest plans for the proper disposal of the hotel's sewage. I visited Coshocton September 25th and inspected the alleged nuisance.

Coshocton has for some time had a public water supply but no sewerage, and this was the real source of the trouble. Some months ago three water-closets, two urinals and a stationary washstand were placed in the Park Hotel. The waste from these and also all chamber slops are conducted by a drain to a cesspool in the yard behind the hotel, and about twenty-five feet from the rear of the hotel building. The cesspool is water tight and of large size, but the drain entering it is placed midway between the top and bottom, so that the amount of waste poured into it required the cesspool to be emptied about four times each week. For this purpose a pump was placed in the cesspool and a leather tubing used to connect the pump with a water tight wagon bed, which was used to remove the contents. Stirring up

this cesspool created an intolerable stench, of which the neighbors complained, and in one house next the hotel, the entire family had been ill with bowel trouble of a dysenteric character, of which one child died. The attending physician was of the opinion that the odor from the cesspool was the cause of the illness.

A meeting of the board of health was held in the evening in the office of Senator Forbes, the agent of the hotel property, and Captain James, who lives near the hotel, and who was aggrieved by the nuisance, being present.

On being called on, I gave the opinion that no disposition could be made of the hotei sewage without creating more or less of a nuisance, except to carry it off by a sewer. I was informed that Captain James and Senator Forbes had endeavored to secure a sufficient number of petitioners to build a public sewer along the street on which the hotel is located, but had failed. These gentlemen expressed their willingness to contribute to the building of a private sewer, provided the owner of the hotel and other citizens along the line would join in the expense. I informed the board that the outlet of such a sewer would have to be submitted to and receive the approval of the State Board of Health. An order was adopted by the board requiring the proprietor of the hotel to discontinue the use of all water-closets in the hotel except one on the second floor used exclusively by female guests. Captain James and Senator Forbes agreed to use every effort to secure the building of a private sewer which would accommodate the hotel.

On September 22d, a telegram was received from Senator Forbes requesting the board to act upon the proposed outlet of the private sewer, which had been assured The president appointed Dr. Wise and myself a committee for this work. The committee visited Coshocton on the 26th and carefully looked over the plans for sewerage and outlet. The only water supply that could possibly be affected is that of Zanesville, which is taken from the Muskingum river about forty miles below Coshocton. The following letter of permittance was sent to the petitioners:

COLUMBUS, OHIO, September 28, 1893.

MESSRS. E. W. JAMES, J. P. FORBES, et al., petitioners, Coshocton, Ohio:

Gentlemen: Your petition to the State Board of Health to construct a private sewer with an outlet into the Tuscarawas river at or near the foot of street, Coshocton, was duly received and referred to the undersigned with power to act. The committee, after due examination, does hereby grant your petition and approve the plans and proposed outlet of said sewerage system.

(Signed)

C. O. PROBST, S. P. WISE, Committee.

#### INVESTIGATION OF A NUISANCE AT ELMWOOD PLACE.

BY DR. B. STANTON, COMMITTEE.

To the State Board of Health:

Having been appointed by the president of the board to examine and report upon a nuisance existing in the village of Elmwood Place, Hamilton county, I would respectfully submit the following:

On July 20th I visited Elmwood Place, and found that the nuisance complained of is caused by ponds of water that remain for some time after having rain on most of that part of Carthage pike lying within the corporate limits of the village; that these ponds are caused by the grade of the intersecting streets being several inches higher than that of the pike. As the pike was laid out and for many years has been maintained at its present grade, and as the grade of the intersecting streets was

fixed by the village authorities at a later period, it seems to me that the village authorities are alone responsible for whatever nuisance may be caused by the difference in grades, and that to them the health authorities must look for relief.

I learn that the board of county commissioners now have in contemplation the improvement of the Carthage pike next year by paving it with brick. If the grade of the pike and the intersecting streets is made the same, the difficulty will be removed, but in the meantime I see no way to abate the nuisance of which complaint has been made to your board, but for the village authorities to drain the pike at the lowest point, which could be done without necessitating a heavy outlay.

As the nuisance was caused by the vidage authorities I have advised the local board of health that they should be appealed to remedy the evil.

## REPORT ON THE SANITARY CONDITION OF GALION.

#### BY THE SECRETARY.

A request was received from the board of health of Galion to make an inspection of that city for the purpose of recommending necessary sanitary improvements.

Accordingly I went there July 28th, and was met by the health officer, Mr. Eise, who is also the city elerk. The short time at my disposal prevented a thorough investigation being made.

In the afternoon, in company with the board, a drive was taken over the city. We first visited a fertilizing establishment located on a public road just beyond the corporation limits. Here we met the township health officer.

The establishment, owing to the collection of bones, had caused considerable complaint. The township health officer informed me that he had consulted with the owners, and was hopeful of having it removed. This failing, the township board had determined to take steps to abate the nuisance. Advice for such proceedings was given.

We next visited two slaughter houses, one inside, the other outside the corporation. The first was in excellent condition, but the other was exceedingly filthy. The offal was being fed to hogs. I explained to the Galion board the license method for dealing with such slaughter houses, as enforced by the Warren board of health. I was then shown the city dumping ground, which was leased by the council a year or so ago. It is well located, and the board requires all dumping of night soil and garbage to be done there. We then inspected the outlet of the main sewer. This discharges into a small stream remote from dwellings; but on account of the stream having been dammed a short distance below, accumulation of sewage has greatly corrupted it. It is likely that serious trouble will eventually result. The location of the outlet and the surroundings are favorable for purification of the sewage, either by filtration or precipitation. The water-works, which was visited next, is located in the corporation. The plant is an inferior one, having been built by private enterprise some years ago. Originally, water was obtained from a well about 25 feet in diameter, located in low ground not far from a small stream. At present, water is obtained from two or more bored wells. There was a suspicion that water was being taken directly from the creek, but apparently such water was used solely for boiler purposes. The majority of the citizens still depend on private wells for water supply. We then inspected the worst nuisance to be found in Galion, a small stream that flows through the central part of the city and receives various forms of filth, including drainage from privy vaults. This stream runs through the basements of several houses, and passes under one of the main streets, where it is covered over. I was of the opinion that the only practical plan for abating this nuisance would be to build a sewer along the course of the stream.

A trip through the alleys and side streets showed the town to be remarkably free from surface filth. In the evening a meeting of the board of health was held, when various matters to which my attention had been called, were fully discussed.

I advised the board to adopt and strictly enforce a rule requiring privy vaults to be made water tight, or a dry earth closet to be substituted. It has been customary there when a new vault was required, to cover up the old one, allowing the filth to remain. I urged that as numbers of the people would doubtless depend on wells for years to come, it was especially important to guard against fecal pollution of the soil. The matter of controlling the spread of contagious diseases was fully discussed, and some useful hints were given the board. A vote of thanks was tendered for my inspection.

## INVESTIGATION OF SLAUGHTER HOUSES AT MARION, OHIO.

BY DR. R. D. KAHLE, COMMITTEE.

To the State Board of Health:

By request of the president, and in response to a request from the trustees of Marion township, I visited Marion on June 19th, to inspect the slaughter houses of that place.

In company with the township trustees, the health officer, and a member of the city board, we visited all the slaughter houses of that city and township—six in number.

The first one we visited, that of Mr. Uncherfurst, we found to be in good condition. It was the only one that did not keep a number of hogs to eat the viscerablood and offal of the animals killed.

It was evident that they were all making an effort to keep their slaughter houses in a sanitary condition, and had succeeded in a degree. At all of them, lime was used abundantly on the old bones and yard; but the bones at several of them were scattered about the yard and emitted an offensive odor.

The last one we visited, situated east of town and owned, I believe, by Mr Lutzy, was in much the worst condition. Hogs were eating the blood, viscera and offal from recently killed animals, which were thrown just outside the door, where they stood more than knee deep in guts, blood and manure, and thousands of flies were swarming around, foul odors filled the air and polluted the neighborhood. I do not think it possible to keep hogs at a slaughter house to eat the offal and have it in a proper sanitary condition. I believe the offal should be burned or buried, and so advise, but if they insist upon feeding them to hogs, it should be done at some distance from the slaughter house. Several of the butchers said they did not kill the hogs that were fed on this stuff but sold them.(?)

I informed the township trustees that they have full jurisdiction to regulate these places and have them kept in proper sanitary condition, and which I was assured they would do, while several of the owners signified their willingness to do all they could to keep their places in proper condition.

## REPORT ON AN INVESTIGATION OF A NUISANCE AT NEWARK.

OHIO STATE BOARD OF HEALTH,
OFFICE OF SECRETARY,
COLUMBUS, OHIO, June 7, 1893.

To the Board of Health, Newark, Ohio:

GENTLEMEN: In response to a petition from numerous residents of your city we visited Newark June 6th, and in company with Dr. Rank health officer, and Dr. Collins of your board, investigated a nuisance complained of by the aforesaid petitioners.

The nuisance is due to standing water covering a large area at the west side of the city—partly without and partly within corporation limits. The collection of water is due to the stoppage of a drain laid by the city in what was originally a township ditch.

In a number of houses in this district the cellars are flooded with water from one to two feet deep, and wells are affected, giving rise to conditions detrimental to health and comfort. The large pond of stagnant water, unless speedily drained, will also be a further menace to health. It is especially desirable at this time, with cholera spreading in Europe, that such conditions be removed at the earliest possible time

Our investigation included the entire length of the drain, and we are of the opinion that it has become stopped in some part of its upper third.

We respectfully suggest, as a means of temporary but immediate relief, that the drain be opened in several places at the upper end, with the view of locating and removing the obstruction. If this can be done, the flooded district will in all likelihood find immediate relief.

The city engineer, however, with whom we were not able to advise, is doubtless much better qualified to suggest the proper manner of procedure, as our examination was necessarily hurriedly made. We would only urge that some adequate measures be taken at once to relieve this portion of your city from danger which has already existed for many weeks.

We were informed by Dr. Collins that you have no sanitary police in your city. It is most desirable that the sanitary condition of our cities should this season be the very best, and to obtain this it is necessary that a house to house inspection be frequently made. This will require the services of one or more sanitary policemen, and indeed; in a city of the size and importance of Newark, there would seem to be need of the constant employment of such an officer.

Respectfully,

(Signed)

E. T. Nelson, President, C. O. Probst, Secretary.

## REPORT ON AN ALLEGED NUISANCE AT RIPLEY.

BY B. STANTON, M. D.

MR. PRESIDENT: Having been appointed to investigate an alleged nuisance at Ripley, Ohio, arising from the overflow of vaults and the drainage of stables and kitchens into Church alley near the intersection of Main street, I have to report that I went to that place July 12th, and, with the health officer, made an inspection of the alley and street complained about.

I found three vaults, mere shallow pits, overflowing with every rain into the alley, also several stables in which cows and horses were kept, the manure being piled up on the premises in close proximity to the alley, and in one instance, in the alley itself, where it was permitted to remain for weeks at a time. In one stable, that of Mr. Reinhart, in which five cows and one horse are kept, the urine was conducted through tiling to the alley. All of these nuisances existed on Church alley within two squares of Main street, most of them within one square.

From Church alley the drainage is eastward to Main street, thence northward on Main street about four hundred feet, thence eastward about a thousand feet to Redoak creek. Church alley being paved with stone, most of the liquids from the sources above named flow to Main street, where, the soil being sandy and the gutter not paved, they gradually soak into the ground. The odor arising from the alley and street is very unpleasant at all times, even a hard rain not removing all of the

offensive material. At times, and especially in warm weather, the doors and windows of the offices, stores, and residences had to be kept shut. This condition had existed for years and although notices to abate the nuisances had been served upon the offenders by previous boards of health, no attention was paid to them, one obstinate individual, who was responsible for most of the trouble, defying the health authorities.

As this was a matter over which the local board of health had jurisdiction, and for the removal of which they had ample power, and as there were no records showing the dates of service of the notifications served by previous boards, I advised that the present board should begin proceedings de novo, so that in case of failure of the offenders to comply with the orders of the board, a good case could be made in the court.

At the request of the health officer, Dr. Tyler, the mayor, called a special meeting for the evening of the 13th ult., which I was requested to attend and confer with the members as to their powers, duties, etc. At that meeting such action as I advised was taken, notices to abate within ten days the unisances complained of were ordered served upon the offenders, and the health officer was instructed to begin legal proceedings against any failing to comply with the order of the board.

I am pleased to say that the notices were promptly obeyed and the following letter from the health officer of Ripley will show that the nuisance is entirely abated:

RIPLEY, OHIO, August 1, 1893.

DR. B. STANTON, 157 Dayton street, Cincinnati, Ohio:

MY DEAR DOCTOR: Your very kind letter of inquiry in regard to our board of health received. In reply will state, the board ordered notices served, which was done, and with good results. Church alley presents a new appearance. Your visit to our town put new life in Ripley board of health.

With kindest regards,

(Signed)

GEO. P. TYLER.

# INVESTIGATION OF AN ALLEGED NUISANCE AT SALEM.

#### BY THE SECRETARY.

The following petition was received from residents of Perry township, which is adjacent to the village of Salem, Columbiana county:

SALEM, OHIO, August 12, 1893.

To the State Board of Health, Columbus, Ohio:

Gentlemen: We respectfully call your attention to the fact that we, citizens of Salem, Columbiana county, Ohio, live in close proximity to a living stream of water which runs in a southeasterly course past our homes in Perry township. Said stream is formed by the junction of two other streams located in the southern part of the city of Salem, and at or near the Salem Wire Nail Mill. Your petitioners also represent that said two streams forming the stream aforesaid, drain almost the entire filth of the city of Salem into said stream, commonly known as the County Ditch. Last year the county commissioners caused said stream or ditch to be cleansed by throwing all manner of filth on the sides of the banks thereof; the effect of which was and did cause infectious or contagious endemic disease, to wit: diphtheria, typhoid fever, last year resulting in death and much suffering in the vicinity of said stream. This year the stream is befouled by acid, deposited by the Wire Nail Mill Company; another cause is emptying the contents of privy vaults therein, thereby causing said stream or ditch to answer the purpose of a sewer for the city

of Salem: all of which is detrimental to the general public health, causing the stream to be infectious, polluted and befouled, breeding disease among our people. The unhealthful condition of the stream last year resulted in 23 cases of diphtheria and one death. This year said stream is in worse condition than last; already four cases of diphtheria exist and five cases of typhoid fever, and from general reports both diseases are liable to spread.

We respectfully represent that the municipal and township boards have been visited by us, and have heard our complaint, but so far they have seemed uninterested and have taken no action in the matter. We now beg of you that you immediately investigate the premises along the line of said county ditch, and make careful inquiry in respect to the causes of diphtheria and typhoid fever among us, and we ask that you take such action as will prevent spread of said diseases. We would suggest that it would be impossible to form a correct idea of the condition of the premises unless you visit the same. By notifying any of the undersigned they will gladly meet you and direct you along the line of said ditch.

Hoping that you will remedy the evil promptly by due course of law, we are, Yours respectfully,

(Signed)

F. H. FULTS, and 26 others.

A copy of this petition with a request for a report on the alleged nuisance, was sent to the boards of health of the village of Salem and of Salem township. The following report was received from the health officer of Salem:

SALEM, OHIO, September 21, 1893.

C. O. PROBST, M. D., Columbus, Ohio:

DEAR DOCTOR: Yours of September 18, 1893, with inclosed petition, received. Several years ago Columbiana county constructed a ditch, perhaps a mile long, skirting the southern limits of Salem, a fractional part being within the city limits. This ditch drains a flat territory, in which, among other manufacturing establishments, is located the Salem Gas Works and the Salem Wire Nail Plant. Also a storm water sewer into which several closets empty and which receives the natural surface drainage of a large part of the city, emptying into this ditch. Some four weeks ago a committee composed of citizens of the township, and not of Salem, who reside in close proximity to the terminus of this ditch, came before me with a remonstrance, alleging that the contents of said county ditch was the cause of their diphtheria, typhoid fever, and kindred diseases. I advised them to place their complaint before their township board, claiming that we had no jurisdiction in the case. But in order to meet their repeated desires, it was agreed upon that the township trustees, the petitioners, and the Salem board of health should have a joint meeting, which meeting was held September 11, 1893, at which time the matter was fairly considered. A few days prior to this meeting, a sanitary policeman and myself started out early in the morning and made a thorough survey of the entire ditch, for the purpose of properly informing our board on the questions involved. The following are the facts which we have submitted to our board at said stated meeting:

First, the Salem Wire Nail Company, in the cleansing of wire-rod preparatory to the manufacture of nails, makes use of the following solution in large quantities: Water, 100 gallons; sulphuric acid, five gallons. After this solution has fiulfilled its purpose, it goes down the county ditch as sulphate of iron. So strong and concentrated is this solution that it has killed aquatic life for five or more nules. The ditch throughout its course, and far beyond it on the sides and bed of the stream, shows where the red oxide of iron is deposited. Moreover, part of this ditch is tiled, occasioning at the inlet gratings, before which it was lodged, a large quantity of debris, when our investigation was made. Not along the ditch, nor even at this point of stagnation was there the slightest putrefactive odor discovered. We came

to the conclusion that the people who had petitioned, had no case to present before the Salem board of health. We are convinced that their trouble lies nearer home. I am of the opinion that germ life cannot live in the above solution and have claimed that it was a positive benefit to them. The outcome of this joint meeting resolved itself in that the township board of health (the township trustees) invite the State Board of Health as the most disinterested party, to investigate and place the cause creating disease where it belongs.

Now, Doctor, if you desire to place special business before our board we will be glad to extend any information you might call upon us to supply.

Truly,

(Signed)

PAUL E. BARCKHOFF, H. O.

A second petition was received from the same persons urging the board to personally investigate the complaint. I was instructed by the President to make an investigation and went there October 5th and met the petitioners. About two years ago the county commissioners constructed a ditch along a natural water course, commencing at the Wire Nail Mill Company's works, a short distance southwest of the P., Ft. W. & C. depot, within the corporation limits. The ditch passes under Depot street and through Perry township for about one and a half miles, emptying into a small creek. At its commencement this ditch receives the refuse from the nail works; this refuse consists of a solution of sulphuric acid—1 to 20—in which iron wire is immersed for the purpose of removing the rust with which it is covered when received.

The sulphate of iron is thus formed. The daily amount of this refuse I was unable to learn, but it is considerable. The solution is discharged into a shallow earth basin with an overflow into the ditch. About eighty rods from this point, after the ditch crosses Depot street, a storm water sewer from Salem, recently constructed, empties into it. This sewer, called a "storm water sewer," receives in fact the waste from a considerable number of houses. Another storm water sewer is being built which will extend up the "Valley of Gahanna." The natural drainage of this valley is into the watercourse which has been replaced by the county ditch. A number of houses have drained into this valley, and the sewer being built will receive this drainage. The excrement from the employes of several factories also enters this ditch. I am not able to even estimate the number of persons who use this ditch for sewage disposal purposes, but there are undoubtedly a considerable number.

Towards the upper end of the county ditch it passes close to the P., Ft. W. & C. R. R. track. At this point three twenty-four inch sewers, one above and two below, have been placed in the ditch and covered with earth. The railroad company contributed to the building of the ditch in order to have it underground at this point. This portion of the ditch is 1,000 feet long. There is again an open ditch, and then three twenty-four inch sewers placed parallel at the bottom of the ditch and covered over. Iron screen gratings are placed at the heads of these sewers to intercept floating debris. The accumulation of boards, sticks, leaves, etc., had almost stopped the flow in the ditch, and in heavy storms has caused it to overflow its banks, which in places are higher than the adjacent land. The overflow is left to evaporate. The stream was of a reddish brown color when undisturbed, but at the bottom of the ditch there was in places from three to four feet of a black, ill smelling muck. Bad odors were perceptible along the course of the ditch, which, according to statements of various residents in the neighborhood, are very much worse at times. The ditch is crossed by a road at one point, and passing teams stir up the filth at the bottom.

As you will note, it is claimed by the health officer of Salem that the refuse from the wire nail mill—sulphate of iron—disinfects the sewage in the ditch and prevents nuisance. This would probably be the result were it not for the obstructions in the ditch, and the conditions at Salem afford an interesting experiment in the chemical precipitation of sewage. The ferrons sulphate which is converted into the ferric oxysulphate through the absorption of oxygen, is mixed with this dilute sewage at irregular intervals and in variable quantities. The ditch acts the part of a precipitation tank, the arrested flow in the ditch giving time for the sludge to settle to the bottom. Here the similarity in conditions at Salem and at precipitation works ceases, and this is the real cause of the nuisance. In sewage disposal works arrangements are made to regularly draw off the water and remove the sludge, but here the sludge remains at the bottom of the ditch, several feet in depth. The iron salt, which is antiseptic, does not prevent subsequent decomposition of this sludge, and noxious odors are generated.

In regard to the sickness alleged to have been caused by the condition of the ditch, it could scarcely be held to be consistent with accepted views concerning the etiology of typhoid fever and diphtheria, to suppose they are related as cause and effect.

Last year there were twenty-one cases of diphtheria among families living along the course of this ditch; this year, up to October 5, there have been four cases. Pive years ago there was one death from diphtheria in the neighborhood, which, prior to last year, was the only case known to any of my informants for a period of thirteen years or more. It was this fact that impressed the petitioners and led them to regard the polluted ditch as the cause of the prevalence of the disease.

No extraordinary precautions were taken last year to prevent spread of diphtheria, except imperfect isolation and disinfection, and it is probable that it was spread by contagion, and that the revival this year is due to the same cause.

Cases of typhoid fever have also occurred in families living near the ditch. I consulted the two physicians who attended the diphtheria and typhoid fever patients, but neither of them were of the opinion that the ditch caused the nuisance. The city of Salem has had considerable typhoid fever and diphtheria for several years in parts remote from the ditch. It might be stated, parenthetically, that Dr. Yengling, of Salem, called my attention to the fact that to his own knowledge abandoned wells in Salem in some instances were being used for privy yaults.

Part of the public water supply of Salem is from deep wells, pumping from which effects many shallow wells, and Dr. Yengling attributes the prevalence of typhoid fever in Salem to this pollution of the water supply.

I also consulted Dr. Barckhoff, health officer, and several members of the board of health in regard to the ditch nuisance. Dr. Barckhoff, said it was not the intention to permit other house connections to be made with the storm sewers, and that he expected sewers for house drainage to be built soon. He expressed the opinion that if the proper method of abating the nuisance could be pointed out, the difficulty might be adjusted by the Salem authorities.

It is very probable that the storm water sewers will be used more and more for house drainage purposes, and that the nuisance complained of, unless proper steps be taken, will be augmented from year to year.

In my judgment, the nuisance may be temporarily dealt with by removing the tiling and other obstructions to the tree flow of water in the ditch. The winter storms would then be likely to flush it clean, though it may be necessary to aid the removal of the sludge by hand.

Ultimately, unless the sewers are relieved of house drainage, it will probably be found necessary to purify the sewage before allowing it to enter the ditch. The conditions are very favorable, seemingly, for this to be done by chemical precipitation. No levels were taken, but I am of the opinion that the sewage could be received in tanks near the ditch with an overflow by gravity into it. There are few dwellings near, and it is not likely that this part of the village will be used for dwelling purposes. If the wire nail mill continues to form sulphate of iron as a waste product, this, with the addition of lime, could be used as a precipitant.

## REPORT ON THE COLUMBIANA COUNTY INFIRMARY.

OHIO STATE BOARD OF HEALTH,
OFFICE OF THE SECRETARY,
COLUMBUS, OHIO, March 21, 1893.

MR. JOHN M. SEARS, President County Board of Visitors, Salem, Ohio:

DEAR SIR: In response to a request from the Board of Visitors of Columbiana county, an investigation was made of the sanitary condition of the Columbiana county infirmary, March 16, 1893, and we beg to respectfully submit the following report:

The Columbiana county infirmary is situated about four miles east of New Lisbon, and contains one hundred and sixty or more immates. The buildings, three in number, and of brick, are located on the slope of a hill, at the base of which flows a small creek. The main building, which has three stories, and in which all the inmates dwell, except the insane, idiotic and epileptic, showed a lack of proper care. The floors of the living rooms, kitchen and dining rooms were dirty, and the bath rooms were badly kept. On the third floor, where some thirty or more inmates sleep, a few of the rooms, owing to recent additions to the buildings, were absolutely without light and ventilation, and utterly unfit for sleeping rooms. The doors to outside exits from this floor were locked and the keys were gone. An exit intended for a fire escape, had been boarded over, and in case of fire the only available exit is a narrow stairway up which the fire would naturally lead and cut off all escape. Running under the kitchen is an open drain which receives a part of the kitchen slops; this drain also runs under one corner of the milk-house—an exceedingly bad arrangement. The cellar under the main building is very dark and damp, and at the time of our visit, contained pools of water; decaying cabbages, apples and potatoes were strewn about the floor and on benches, filling the atmosphere with bad odors.

The insane building is a separate building of two stories and a basement. The foulness of this building is beyond description. In the basement there is a central hall with rooms for inmates on either side. The hall floor, originally cemented, is now broken in many places, and a sewer, covered in part by loose boards, runs through its center. The flooring in some of the rooms is worn and broken, showing large openings. The rooms were foul and dirty, and scrubbing would simply wash much of the filth onto the ground underneath. The patients are filthy in their habits, so that the ground under the basement must be saturated with filth of the worst description. The plastering has almost entirely fallen from the ceiling, and the walls are blackened and dirty.

The first floor over the basement was comparatively clean, although it could only be called so when compared with the basement and the upper floor. Words cannot describe the disgusting foulness of the rooms in the upper story. The temperature was fully ninety degrees; the windows were all closed so that ventilation was practically nill, and the stench that greeted our nostrils was something never to be forgotten, and beyond anything ever experienced by us.

The floors of many of the rooms showed traces of dried excrement and in one room the floor was almost completely covered with it. The rooms on each floor are provided with hopper closets which can only be flushed by a valve outside in the hall; with few exceptions these hoppers were filthy, while in one room the hopper was almost filled with excrement. This was in the room with the extremely filthy floor; and in one corner, lying on the floor, was an insane negro in a condition scarcely to be imagined. The rooms were alive with vermin. That human beings could exist in the atmosphere of this place would seem incredible, yet some sixty or more inmates inhabit this building. There is but one attendant, and the inmates

are locked up at night, the attendant sleeping in the main building, so that in case of fire or accident, (and many of the patients are epileptic) no one is at hand to give prompt assistance.

The water supply of the institution is mainly from a drilled well at the bottom of the hill near the engine house. The well is about 160 feet deep, the first eleven feet being of earth, the other of rock. The sewer from the privy vaults used by the occupants of the main building, and located on the hill-side about 300 feet above the well, passes within ten feet of it. This sewer had become stopped and the contents of the vault had found its way down the hill, over the well, which is covered over and out of sight, into the creek. Although the well is cased with iron tubing part way into the rock, the water is subject to great danger of becoming specifically polluted. Immediately in front of the main building, and on a lower level, is a dug well which is in constant use; it is covered with two flat stones much worn and separated an inch or more. The stones are on a level with or a little below the surface, so that surface drainage from the building must unavoidably run into the well Three or four feet above the well were apple and potato parings, and appearances seemed to indicate that kitchen slops had recently been thrown there. While we were examining the well, a woman was washing a bedstead on the porch of the second floor, and the dirty water was running onto the pavement near the well.

The grounds about the building were in a badly kept condition—old boots and shoes, old stockings, disheloths, rags, broken crockery, boxes and barrels littered the grounds. On the front porch of the second story of the main building, a coffin containing a corpse awaiting burial, was placed on two chairs, no consideration apparently being given to the feelings of the inmates; possibly the dead are thus placed in sight to remind the living that all may hope for a final release from this place.

It is due to those in charge of the institution to point out some of the difficulties with which they have to contend.

Evidence presents itself on every side to show that for many years past the buildings have been allowed to go almost without repair. Attention has been called to the condition of the floor and ceiling of the basement of the insane building; some repairs were being made here, however. In the first and second stories of this building (not counting the basement), new floors were laid some months ago, and the walls were wainscoted some seven or eight feet high. The floors are of oak and oiled, but were laid so badly that in some places one can see through them. On his account it was said to be impossible to scrub the floors, and this was given as the reason for the great filthiness and disgusting stench found here. The joints in the wainscoting were badly shrunken, and it was said to be impossible to keep the bugs out of the walls. The number of patients in the insane department renders it impossible for one attendant to give proper care to the filthy and epileptic patients and keep the building clean. There can scarcely be an adequate excuse, however, for the exceedingly bad sanitary condition in which the institution was found, although it is undoubtedly impossible, owing to the lack of proper repairs, to keep the buildings in a proper state of cleanliness.

Recommendations: The insane building should be thoroughly overhauled. The basement floor should be taken up, the filthy earth removed, and replaced with fresh earth, and the whole basement properly cemented. If deemed necessary the second floor could be covered with a wooden floor made in sections, so that it could be removed and cleaned as required. The flooring in the rooms and halls above should be relaid in such manner as to be absolutely water tight, care being taken to fill all cracks between boards so that filth may not be harbored in the floor. Instead of wainscoting, the side walls should be of hard plaster, painted so they may easily be kept clean. More attention should be given to keeping the water-closets clean. This can only be done with the present plumbing arrangements, by having some

one constantly on duty on all three floors to flush the closets immediately after use. It would be much better if the closets were arranged to be flushed when used by the pressure of the seat.

Arrangements should be made for ventilating all three floors of the insane building. The need of this is very great; and thermometers should be placed on all floors, by which the temperature should be regulated. (The main building, it should have been stated, is heated by steam coils—direct radiation.) Much greater attention should be given to cleanliness throughout this department; an attendant should be on duty at night to guard against fire and accidents and to relieve the wants of those unable to help themselves.

The cellar under the main building should have more windows for light, should be drained and cemented and kept clean. Kitchen slops and all filthy drainage should be wholly excluded from the open dr in which runs under the kitchen, and through the milk-house, and the drains should be thoroughly cleaned and kept clean. The floors of the main building need repairing in many places to prevent filthy water getting beneath them when they are scrubbed. An attendant or trusted inmate should sleep on the upper floor, and be given the keys to the doors of outside exits, through which inmates would have to escape in case of fire.

The sleeping rooms require that more attention should be given to their ventilation. The bed-rooms without light or ventilation should be abandoned for sleeping rooms. The bath-rooms should not be used as store-rooms for clothing, and they should be kept in a cleaner condition.

The well in front of the main building should be filled and abandoned, as should also an old cistern by the engine house which is not used. This cistern is very loosely covered, and inmates might get into it and drown. The sewer which leads from the privy vaults and empties into the creek near the well, should be abandoned; and if the vaults are sewered, the sewer should be carried down the creek to a much greater distance from the well. Great care should be taken to prevent filthy surface drainage from the hill-side and road above from flowing near the well; and no sewer or drains should be near it.

The entire institution and grounds are in need of a thorough cleaning.

The changes indicated above are urgently needed, and will undoubtedly add much to the health and comfort of the inmates.

Respectfully,

(Signed)

S. A. CONKLIN, *President*. C. O. Probst, *Secretary*.

#### REPORT ON THE SANITARY CONDITION OF THE COLUMBIANA CO. JAIL.

BY B. STANTON, M. D.

Mr. President: I have the honor to submit the following report of an inspection of the Columbiana jail, at New Lisbon, made by me on the 29th of August:

The jail, of brick, erected fifty-nine years ago, is a building of two stories and a basement. On the first floor are a parlor and sleeping room for the use of the sheriff, a dining room, 10x15 feet, which is lighted by a single small window, a kitchen and a cell room with two cells for female prisoners. These cells and those on the first floor are about 8x10 feet and seven feet high, have but one window for the two cells, over which is a screen with small openings that but little air or light can enter, and at the time of my visit, about midd y, a lamp was lighted to enable the prisoners to read. The ventilation of these cell-rooms is very imperfect.

In the basement, a story of about seven feet, nearly one-half of which is below the surface of the ground, is the prison proper, where nearly all of the prisoners are confined. This is divided by latticed iron-work into cells which are about 6x8 feet, each cell containing three beds. There is also a dangeon on this floor, the windowless walls of which are stone. This room being unventilated is always damp and musty. The floor of the prison is of boards, under which water can be seen for hours after scrubbing, and in rainy seasons at all times. Under this floor is an untrapped drain, which is supposed to carry off the water to an abandoned vault which is immediately outside the prison walls and just beneath the windows of the jail and the sleeping rooms above. This vault was full to within a few feet of the surface, and has not been cleaned for ten or fifteen years and though no longer used as a receptacle for the ordure from the buckets used by the prisoners, is not redolent of odors that would suggest "A flower of the Amra just opened by a bea." The gases from this vault pass not only through the untrapped drain into the prison, but, escaping from the partially covered top, they find their way through the windows of the apartments above.

Although there has been for several years a sewer in the street in front of the jail, connection with it has not been made, and the night buckets used by the prisoners are now emptied into a yault about thirty feet south of the jail. This vault is full to within four feet of the surface and has not been cleaned out for two years.

The walls of the building, even to the top of the second story, are so damp that the wall paper, some of which has been on but a short time, is falling off, and not only is the plaster disintegrating and falling off from the walls and ceilings, but the mortar between the bricks is falling out.

There is no water on the premises fit for drinking. The water supply for the jail was formerly from a well, but recently partly from the water-works of the town. The well, the water of which used to be good, has become unfit for use because of neglect, the county commissioners not being willing to expend money for cleaning it and keeping out surface water, and as the hydrant water is not fit to drink, the occupants of the jail are subjected to great privation or inconvenience.

In such sanitary surroundings are required to live, not only the prisoners, the average number of which is over twenty, but also the sheriff, his family and assistants.

Notwithstanding the difficulties under which the sheriff labors every effort is made by him to keep the place in as wholesome a condition as possible. The walls of the prison are frequently white-washed, disinfectants are freely used, the floors are frequently scrubbed and the bedding kept as clean as can be; but owing to the dampness of the floor and walls and the poor ventilation, the prison is at all times permeated by a foul odor, and is so cold that but few days during the whole summer have the prisoners been without a fire in the stove by which the prison is warmed. On the day of my inspection (August 29th) there was a large fire in the stove, without which the prisoners would have suffered from cold and dampness. Several were then complaining of rheumatism and during the summer there has been an unusual amount of sickness, but few of the prisoners escaping some attack attributable to their surroundings. "Vomiting, purging and loss of appetite are constant sources of complaint," writes Dr. Graham, the jail physician.

In the south of the jail and but a few feet from it is a stable in which are kept four horses and a cow. In the interests of the stock this building should be removed to a greater distance from the jail.

Such is the condition of one of the public buildings of one of the wealthiest counties of our state—a county rich in agricultural, mineral and manufacturing interests. It is in fit keeping with the infirmary of the same county, the horrible condition of which as reported to your board, by Drs. Conklin and Probst, in Murch of the present year, was such that the state had to assume the care and custody of many of its insane inmates.

The seal of condemnation has been placed upon this institution by almost every grand jury of the county for the last fifteen years; but three times, when a proposition has been submitted to the voters of the county to expend an amount of money that would but slightly increase the taxes, to erect a building in keeping with the humane spirit of the times, it has been voted down.

I have no recommendations to make in regard to the building except that in the interest of humanity and decency it be abandoned and destroyed at as early a day as possible, especially as it is used in part as a place of detention for those accused of crime until their guilt or innocence can be determined by judicial investigation.

If used simply as a place of torture for those convicted of crime, there might be more excuse for the continuance of

Respectfully submitted, (Signed)

B. STANTON, M. D.

#### REPORT ON THE MEDINA COUNTY INFIRMARY.

OHIO STATE BOARD OF HEALTH, COLUMBUS, OHIO, December 19, 1893.

To the Commissioners of Medina County, Ohio:

GENTLEMEN: We beg to submit the following report of an investigation of the sanitary condition of the infirmary of Medina county, which was made on May 26th by the undersigned committee of the State Board of Health.

The infirmary consists of a low two-storied brick building, with a separate department for the insane. These buildings were erected in 1865. They are favorably located as regards health, and are about five miles from the village of Medina, the county seat.

On the date of our visit there were fifty-six inmates, of whom eighteen were insane, twelve idiotic and five epileptic.

From lack of proper foundation support the walls of the building have cracked and settled, in many places to an alarming extent, and there is the possibility of an accident from this cause at any time. The buildings have been condemned, we were informed, by the inspector of workshops and factories, and pronounced unsafe.

Twelve inmates sleep in the upper room of the right wing of the building These rooms are reached by one narrow staircase, and there is no other exit in case of fire. The rooms are heated by one stove the pipe from which extends through the ceiling, entering the chimney in the garret above. There is great danger of fire occurring in this part of the house, and if it should occur at night, there would almost certainly result great loss of life.

In addition to stoves, many rooms of the main building are heated by a furnace. The furnace is located in a dark cellar in which there were several inches of foul water. A drain intended to convey the water connects with the sewer, and as there is no intervening trap, foul air has access to the cellar. The fresh air duct commences in the hallway within the house, the cellar portion of the duct being constructed of boards. The air, fouled by the immates, is carried to the furnace, foul air from the cellar being also drawn in through openings in the wooden duct, and is returned to the immates to be breathed and sent again on its filthy round.

From the settling of walls and from lack of repairs, openings exist in floors over the basement, so that filthy water in scrubbing the floors, unavoidably enters the basement.

The insane department is a veritable death-trap, constructed in violation of all the requirements of health. There are sixteen rooms in this building and eighteen inmates. Twelve of the rooms are 6x9 and 81 feet high. There is one small window in each room, barred and covered with wire netting, so that it cannot easily be raised. All were found closed. They are placed so high that only by standing can you see out. The door closes tightly (each door is locked at night) and the only opening for ventilation is a four-inch hole above the door, opening into the hall. In four of these rooms are hopper water-closets (?) without water, flushing having to be done by hand. In a corner of each of these rooms is a shallow depressed basin connected with the soil pipe down which the filthy water from scrubbing has exit. These fixtures connect with the sewer without traps, and when a bucket of water is dashed down one, foul air is forced up the others. These rooms, and from them the entire insane buildings are thus at all times filled with sewer gas. The waterclosets, and the entire building were as clean as could be under the circumstances. The odors, which were bad, must be greatly worse in winter when doors and windows are all closed.

The only source of heat for the upstairs rooms is the pipe passing up through the central hallway from the stove below. Here also there is great danger of fire—a stove in the hands of lunatics—and in such an event, many would undoubtedly perish.

The floors in many of the rooms were rotten and broken, making it a matter of much difficulty to keep the rooms clean, especially those occupied by patients with filthy habits, and allowing filthy water to saturate the ground under the building.

The bathtubs, wash-stands, and water-closets throughout the building, are without traps; there is, in fact, no trap on any part of the plumbing or drainage system, so that foul air from the sewer permeates every nook and corner of the entire building.

The water for drinking is from a dug well near the building. It is well protected from surface drainage, but is too close to the building for safety. There is an overflowing well a short distance further away which is now used only for cooling milk.

There are two large, well built barns connected with the institution, in one of which were a number of fine, well kept mileh cows. The animals are indeed much more comfortably housed than are the human inmates.

We will not attempt to recommend changes to be made in the sanitary condition of the institution, for the defects are such that it would be next to impossible to remedy them, and the attempt would only involve a useless waste of money.

The only remedy is an entirely new building of approved modern plans; and we cannot but believe that the people of Medina county, when they fully realize the deplorable state in which their poor reside, will cheerfully assume the burden and provide suitable quarters for the unfortunates sustained by their bounty.

It should be stated that the board of infirmary directors, who were with us at the time of the investigation, realize fully the bad condition of the institution, and heartly favor the erection of new buildings.

The institution is kept in the best possible condition under the circumstances, for which the superintendent, Mr. Zimmerman, and his wife, deserve great credit.

(Signed) S. P. WISE, M. D.,

C. O. PROBST, M. D.,

Committee.



## Annual Report

OF

# Local Boards of Health.

FOR THE

Year ending December 31, 1893.



## Ohio State Board of Health.

Office of the Secretary, Columbus, Ohio, Feb. 15, 1894.

To the Health Officer:

DEAR SIR: For the information of the State Board of Health, and for publication in its annual report, will you please furnish at your earliest convenience, a brief report of the work of your board during the year ended Dec. 31, 1893, as embodied in the following queries.

Yours truly,

C. O. PROBST, M. D., Secretary.

Place.

Population.

Health officer.

- 1. For the prevention of diphtheria and scarlet fever does your Board strictly enforce
  - a Notification by attending physician.
  - b Placarding of house.
  - c Quarantine of well children in house with patient.
  - d Quarantine or other precaution for adults in house with patient.
  - c Notification of superintendent of schools of cases reported.
  - f Private funeral in case of death.
  - g Disinfection of house under supervision of Board.
- 2. Does your board require and receive reports of typhoid fever cases?
- 3. What measures are enforced for the prevention of typhoid fever?
  - 4. Do you require and receive reports of cases of measles?
  - 5. What measures are enforced for the prevention of measles?
  - 6. Is a record of contagious diseases kept?
  - 7. What means are taken to secure reports of -
  - a Deaths.
  - b Births.
  - 8. Is a record kept of births and deaths?
- 9. Describe public improvements of a sanitary character made during the year.
  - 10. What is the salary of the health officer?
  - 11. How many sanitary policemen are employed?
  - 12. What sum of money was spent by your Board during 1893?

## ADA—Population, 2,079—W. H. Morrow, Health Officer.

- 1 a Yes, even in suspected eases.
  - b All reported eases are placarded.
  - c Yes.
  - d Yes, where they come in contact.
  - e All eases are reported at once.
  - f Without exception.
  - g In some cases attending physician oversees.
- 2 Yes, and inspects and directs the disinfection and burial.
- 3 Strict sanitary inspection of back yards, cellars and alleys.
- 4 Yes, and placard the house.
- 5 Quarantine and isolation.
- 6 Yes.
- 7 a Undertakers are not allowed to move a corpse until they obtain a burial permit from the Health Officer.
  - b I find it is very difficult to obtain a list of the births as a number occur where no physician is called.
- 8 Yes, I collect the births from the assessors each spring.
- 9 None.
- 10 #30.00.
- 11 None.
- 12 None; all work was done by property holders.

#### ADELPHI-Population, 489—George B. Rose, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d No.
  - c Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Undertaker's certificate from Health Officers.
  - b None.
- 8 None.
- 9 None.
- 10 No salary.
- 11 None.
- 12 \$15.00.

## AKRON-Population, 27,601-Dr. A. A. Kohler, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes, unless they can be removed and quarantined.
  - d Either quarantined in the house or compelled to remain out until card is removed.

- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 Water supply is examined and the excreta disinfected.
- 4 Ves
- 5 Children are quarantined.
- 6 Yes.
- 7 a Physicians are compelled to report. Undertakers must get a burial permit.
  - b No record kept or reports secured.
- 8 Record of deaths kept.
- 9 About four miles of main sewer; about 300 house connections; about 400 brick privy vaults; about 300 privy vaults cleaned and abandoned.
- 10 \$400.00.
- II One.
- 12 About \$12,000.00.

## ALLIANCE-Population, 7,607-Dr. P. W. Welker, Health Officer.

- 1 a We do.
  - b Yes.
  - c Yes.
  - d Do not quarantine adults.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 Stools, etc., are disinfected.
- 4 No.
- 5 None.
- 6 Only of the number.
- ? a The undertakers furnish the reports.
  - b Do not take any.
- 8 No.
- 9 A mile of general sewerage.
- 10 \$150.
- 11 One for a few months.
- 12 About \$350.

#### ALVORDTON-Population, 250-Dr. T. E. Schrider, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f No.
  - g No provision made.
- 2 No.
- 3 None.
- 4 Yes.
- 5 None, except to placard the house as being under quarantine.
- 6 No
  - 8 S. B. H.

- 7 *a* None.*b* None.
- 8 Yes, when any are reported.
- 9 Not any.
- 10 No provision made.
- 11 None.
- 12 None, except to purchase blanks.

## AMELIA—Population, 600—Dr. W. B. Doan, Health Officer.

- 1 *a* Yes. *b* Yes.
  - c No.
  - d No.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Prevent as much as possible visiting the house, fumigation, and keeping the rooms pure and clean as possible.
- 4 Yes.
- 5 None.
- 6 No.
- 7 a I get all the deaths within my jurisdiction and report the same.b Did not know it was required by Board.
- 8 No
- 9 Draining the streets and cleaning up garbage.
- 10 None.
- 11 None.
- 12 None.

## ANNA-Dr. C. W. B. Harbour, Health Officer.

- 1  $\alpha$  Yes.
  - b Yes.
  - c Yes.
  - d Precaution.
  - e Yes.
  - f Yes.
  - g No.
- 2 Yes.
- 3 Disinfecting stools, etc.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a We notify physician in charge; we expect same to be sent in without fail b We notify physician in charge; we expect same to be sent in without fail.
- 8 Yes.
- 9 None.
- 10 None.
- 11 None.
- 12 Just organized.

## ANSONIA-Population, 700-Dr. H. A. Snorf, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Ves.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection of stools and use of sterilized water.
- 4 Yes.
- 5 Isolation.
- 6 Yes.
- 7 a Undertaker must furnish certificate from attending physician.
  - b Reported by physicians and midwives.
- 8 Yes.
- 9 None.
- 10 \$24.00 per year.
- 11 One.
- 12 \$40.00.

## ANTWERP-Population, 1,331-Charles Roberts, Health Officer.

- 1 a Yes.
  - b Immediately on notification.
  - c Yes.
  - d Yes.
  - e Yes.
  - f No funeral gatherings allowed.
  - g Health Officer attends to that.
- 2 Yes.
- 3 In sickness instruction in accordance with State Board; in death no gatherings allowed.
- 4 No.
- 5 None.
- 6 Yes.
- 7 a Weekly inquiries are made of each physician.
  - b No births are reported.
- 8 No.
- 10 One dollar per day during quarantine.
- 11 Health Officer is sanitary police.
- 12 \$72,43.

## ARLINGTON-Population, 371-N. B. Anderson, Health Officer.

- 1 a Yes.
  - b No.
  - c Yes.
  - d No.
  - e No.
  - f Yes.
  - g No.

- 2 None to report.
- 4 No.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 General cleaning up.
- 10 No fixed salary.
- 11 None.
- 12 \$3.00

## ARLINGTON HEIGHTS-Population, 300-J. H. Francis, Health Officer.

- 2 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3. Isolation and disinfection.
- 5 Isolation and disinfection.
- 6 Yes.
- 7 a Attending physician is required to report.
  - b Same as deaths.
- 8 Ves.
- Excellent drainage, village is composed of residences and is a model of cleanliness. No factories and very few stables.
- 10 Nothing.
- 11 None.

## ASHLAND—Population, 3,566—Dr. B. Myers, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d They are cautioned not to come in contact with children.
  - e Yes.
  - f Yes.
  - g The disinfection is under the care and supervision of family physician.
- 3 Houses are required to be placarded.
- 5 All children belonging to the house are required to remain at home.
- 7 α Blanks are furnished undertakers which they are required to have filled out by attending physician and on this certificate the Health Officer issues the burial permit.
  - b None.
- 8 Of deaths but not births.

- 9 The privies along a certain creek running through the village have been removed by order of Board and all built are required to have sealed vaults—several sewers have been improved and cleaned out.
- 10 \$150.00 per year.
- 11 One.

## ASHLEY—Population, 628—Samuel R. Harris, Health Officer.

- 1 a Exempt.
  - b Exempt.
  - c Exempt.
  - d Exempt.
  - c Schools are carefully guarded against the admission of pupils who have been exposed to contagion.
  - g Thus far physicians have been eareful in this matter.
- 2 Yes.
- 3 Thorough disinfection and avoidance of bad water as far as possible.
- 4 Yes.
- 5 Under favorable conditions parents are inclined to prepare to receive rather than to avoid.
- 6 Imperfectly.
- 7 a Through undertaker and physicians.
  - b Through undertaker and physicians.
- 8 Of deaths.
- 9 Sewer and tiles have been so arranged as to leave no stagnant pools. Stringent sanitary measures in general police work.
- 10 \$25.00 per year.
- 11 None.
- 12 Not to exceed \$40.00

#### ASHTABULA—Population, 8,338—Dr. A. W. Hopkius, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d All adults acting as nurses strictly quarantined; others if obliged to work for a living permitted to go out with change of clothing.
  - e Always reported.
  - f Yes.
  - g Not always but always give directions how it is to be done.
- 2 Yes.
- 3 See that the water supply is not contaminated. Disinfection of all stools and spittoons of fever patients. Drains, cesspools etc., kept in good order.
- 4 No
- 5 None.
- 6 Yes.
- 7 a Physicians report to Board of Health also require undertakers to procure a permit before moving a body.
  - b Physicians and midwives required to report to the Board of Health.
- 8 Yes.
- 9 Between three and one-half and four miles of sewer put in, and miles of stone or cement sidewalks.
- 10 \$100.00 per year.
- 11 One, at \$50.00 per month.
- 12 \$1,007.00.

## ASHVILLE-Population, 430-John Johnson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Our Board looks well after the sanitary condition of our town.
- 4 No.
- 5 None.
- 6 Yes, by health officer.
- 7 a Only in cases of contagious diseases.
  - b No means taken to keep record of births.
- 8 No.
- 9 By requiring property owners to construct brick sidewalks.
- 10 \$15.00 per year.
- 11 None except in cases of contagion.
- 12 Nearly \$100.00.

## ATHENS-Population, 2,640—Dr. W. N. Alderman, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
- g Attending physician is required to see to disinfection.
- 2 No.
- 3 The stools of patients are disinfected and also the room.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Burial permits are issued to undertaker. They are not allowed to bury without permit and then not until they furnish attending physician's certificate giving date, duration of illness, cause of death, etc.
  - b Blanks are furnished physicians for reports of births.
- 8 Yes.
- 9 None special. Our town is putting in water-works at this time and expects to put in sewerage system this spring.
- 10 \$12.50 per mounth.
- 11 The marshal is paid for doing this work.
- 12 \$50.00.

#### ATTICA—Population—682—Dr. A. W. Knight, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Yes.

- c Yes.f Yes.
- g Yes.
- 2 Yes.
- 3 Isolate patients, disinfect stools, and general cleanliness.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 b Keep record of births.
- 8 Yes.
- 9 None.
- 10 \$10.00.
- 11 One.
- 12 None.

## BARNESVILLE-Population, 3,207-Dr. D. D. Laws, Health Officer.

- 1 a Within 12 hours after disease is recognized.
  - b Yes.
  - c Yes.
  - d No.
  - e Yes, but superintendent does not require a permit to return.
- 2 No
- 3 Recommend use of boiled water.
- 4 Require reports.
- 6 No.
- 7 a Undertakers say the doctors say they have not time to make them out.
  - b Births are the same as deaths, unless compulsory we can not give records. Law is what we need.
- 8 No.
- 9 None.
- 10 30c. per hour for actual time,
- 11 None.
- 12 Not to exceed \$250.00

#### BARNHILL—Population, 969—Dr. R. A. Douglas, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - c Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 All sanitary precautions.
- 4 Yes.
- 5 Sanitary measures.
- 6 Yes.
- 7 a Members of the board report deaths.
  - b No attention is paid to same.
- 8 Not of births, but of deaths.
- 9 Sewerage through town and general cleaning up.

- 10 \$4.00 per month.
- 11 One.
- 12 About \$50.00.

## BEDFORD-Population 1,043.-N. H. Decker, Health Officer.

- 1 a Yes,
  - b Yes.
  - c Yes.
  - d As far as possible.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Cleanliness and care to destroy all fecal matter from suspected cases.
- 4 Yes.
- 5 Quarantine.
- 6 No.
- 7 a Undertaker keeps record.
  - b None.
- 8 Undertaker keeps record of deaths.
- 9 150 feet of sewer taken up and cleaned. Large amount of draining done and general cleaning up.
- 10 25 cents per hour for actual time employed.
- 11 None.
- 12 Estimated \$50.

#### BELLAIRE—Population 9,934.—Dr. D. W. Long, Health Officer.

- $1 \quad a \quad \text{Yes.}$ 
  - b Yes.
  - c Not strictly enforced.
  - d Not strictly enforced, though it is generally done.
  - e So far have not done so, but will.
  - f Yes.
  - g Pamphlet left with family in most cases.
- 2 Yes.
- 3 None, except Health Officer asks the attending physician to give orders as to proper disinfection.
- 4 Yes, but physicians are not prompt to comply.
- 5 None.
- 6 Health Officer keeps a report but board does not.
- 7 a Each attending physician must fill out a death certificate, which is given to Health Officer who then grants a permit for burial.
  - b No action has been taken by our board in this matter and no reports are made. The assessor secures a list of births each year.
- 8 A record of deaths only by Health Officer.
- 9 Board required all alleys and yards to be cleaned and disinfected. Streets are cleaned often, and privy vaults emptied when full.
- 10 \$200.00 per year.
- 11 One for the summer months.
- 12 About \$600.00.

#### BELLEFONTAINE-Population, 4,245-Dr. R. G. Reed, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No.
  - d No.
  - e No.
  - f In cases of diphtheria.
  - g In cases of diphtheria.
- 2 Yes.
- 3 None.
- 4 Yes, •
- 5 None.
- 6 Yes.
- 7 a We issue no burial permits until the undertaker's and physician's certificates are filled out in full.
  - b Every physician is supplied with blanks, which must be filled out and sent to the clerk of board.
- 8 Yes.
- 9 None.
- 10 \$51.00 a year.
- 11 One sanitary police and one sanitary officer.

## BELMONT-Population, 384-W. C. Hedges, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - g Yes.
- 2 Yes.
- 3 Cleanliness, such as drainage and cleaning of pig pens and alleys.
- 4 Yes.
- 5 Nothing special.
- 6 Yes.
- 7 a No special effort.
- 8 Yes.
- 10 \$35.00 per year.
- 12 \$65.00.

#### BEREA-Population, 2,535-T. G. Card, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Quarantine and send the well children away.
  - e Yes.
  - f Always.
  - g Distribute pamphlets and superintend disfection as far as possible.
- 2 Yes.
- 3 We recommend cleanliness and disinfection, examination of the water, etc.

- 4 Ves.
- 5 We have enforced none.
- 6 Yes.
- 7 α We require the physicians to report to the board.
  - b No.
- 8 Only at cemetery.
- 9 Drained one lot had several cellars drained and cleaned and the sewer slushed out and cleaned.
- 10 Not any.
- 11 One; 25 cents for serving notices and printing cards.
- 12 \$29.75.

## BLAKE'S MILLS-Population, 390-Charles Shoop, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d No.
  - g Yes.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Ves.
- 8 Yes
- 9 We improved the alleys, privy vaults, pig pens and tore down one old house.
- 10 \$1.50 a day when he is on duty.
- 11. None.
- 12 \$17.10

#### BLANCHESTER—Population, 1,196—Dr. S. B. Judkins, Health Officer.

- 1 a Yes within 24 hours.
  - b Yes.
  - c Yes; we separate the well from the sick.
  - d No one allowed in patient's room but physician and nurse. Where the adults have not come in contact we allow them to continue their avocations.
  - e Yes, as soon as the case is reported to the Health Officer.
  - f Yes.
  - g No, not always, but usually we see to it.
- Yes.
- 3 Yes.
- 4 None.
- 5 Yes
- 6 Only as we receive report from attending physician.
- 7 a The undertaker is required to get a burial permit from Health Officer.
  - b None; but we contemplate in the near future having our physicians report each birth within 24 hours.
- 8 No, only deaths.
- 9 None.
- 10 \$60.00 per year.
- 11 None.
- 12 'None.

## BLOOMDALE-Population, 519-E. Wineland, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 Not any.
  - b Not any.
- 9 Not any.
- 10 Nothing.
- H Two.
- 12 \$30.00.

## BLOOMINGBURG-Population, 638-J. J. Pinkerton, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Strictly so.
- 2 Yes, by attending physician.
- 3 Looking after the condition of the wells and cisterns.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 a Require them of attending physicians.
- 9 Looked after and kept in good condition all nuisances.
- 10 \$27.00 per year.
- 11 None.
- 12 \$27,25.

#### BLOOMVILLE-Population, 758-Dr. F. S. Martin, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Adults are not rigidly quarantined, but isolate themselves as much as possible.
  - e Yes.
  - f Yes.
  - g Only when attending physicians cannot certify that disinfection has been properly done.
- 2 Yes.
- 3 Look after general sanitary condition of entire village.
- 4 Yes.
- 5 Would follow rules and regulations adopted by State Board.
- 6 Yes.

- 7 a A permit for burial from undertaker, with attending physician's report attached.
  - b Upon blanks furnished by Board of Health.
- 8 Yes.
- 9 Construction of a ten-inch tile drain, giving ample drainage to west portion of village.
- 10 \$50.00.
- 11 One.
- 12 About \$100.00.

## BOND HILL—Population, 1,000—G. Perin, Health Officer.

- $1 \quad a \quad \text{Yes.}$ 
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 4 Yes.
- 5 The same as other contagious diseases.
- 6 Ves
- 7 a Physicians or attendants are required to notify Health Officer within twenty-four hours after death.
- b Physicians and midwives are required to notify Health Officer within thirty days after birth.
- 8 Yes.
- 9 None.
- 10 \$40.00 per year.
- 11 None.
- 12 \$63.50.

#### BOURNEVILLE-Population, 320-Dr. D. D. Smith, Health Officer

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Cleanliness and investigate water supply.
- 4 Yes.
- 6 Have had none.
- 7  $\alpha$  We compel the undertaker to furnish certificates of deaths.
  - b Report from attending physician.
- 8 Yes.
- 10 None.
- 11 One.
- 12 \$43.00.

## BOWLING GREEN-Population, 3,467-A. Ordway, Health Officer.

- 1 a Ves
  - b As soon as notified.
  - c Yes.
  - d Quarantine all in the house.
  - e Yes.
  - f Yes.
  - g According to rules adopted by your Board.
- 2 No.
- 3 By filling all cess pools or draining the same and keeping clean.
- 4 Yes.
- 5 Strict quarantine and a thorough disinfection of the place.
- 6 Yes.
- 7 a The physician's certificate and the undertaker's record.
  - b None.
- 8 No.
- 9 Filled two cess pools and have constructed three short sewers.
- 10 \$10.40 per month.
- 11 None.
- ·12 About \$75.00.

#### BROOKFIELD-Population, 400-W. E. Duulap, Clerk.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Quarantine and disinfection of house.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a The undertaker or person in charge is required to file a report.
  - b The attending physician is required to file a report once each month.
- 8 Yes.
- 11 None.
- 12 \$30.00.

## BUCYRUS-Population, 5,974-Dr. A. M. Duncan, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g No.
- 2 Yes. But it results in a larger number of "malarial" cases.
- 3 Generally premises are thoroughly investigated and the excreta ordered carefully removed and disinfected.

- 4 Yes (not German measles).
- 5 Children are kept from school as in diplitheria and scarlatina.
- 6 Has not been.
- 7 a Require report of death from undertaker, issue burial permit and require it shown to secretary of cemetery association before he can issue a permit.
  - b None.
- 8 Only of deaths.
- 9 The extension of our sewer system.
- 10 \$150 per aunum.
- 11 One.
- 12 Unable to report.

## BURBANK—Population, 360—Dr. M. H. Dodd, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Sanitary restriction.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Report from physicians.
  - b This is strictly attended to by township assessor every spring and all are reported.
- 8 By the assessor in each precinct or township.
- 9 The suppression of all places likely to breed disease, cleansing of cellars and houses of all kinds and any nuisance that is reported.
- 10 Nothing.
- 11 None.
- 12 Only for books and stationery.

## BUTLER-Population, 700-Dr. J. M. McLaughlin, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 Quarantine.
- 6 No.

- 7 a Undertaker's certificate before burial permit is issued.
  - b Report to health officer on blank.
- 8 Yes.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 \$25.00.

## CADIZ-Population, 1,716-Mrs. M. J. Lyons, M. D., Health Officer.

- 1 a Yes.
  - b Yes.
  - c As much as possible.
  - d Yes.
  - e No cases to report.
  - g None required.
- 2 No.
- 3 Attention to the general sanitary condition of the town.
- 4 Yes.
- 5 Children are not allowed to attend public schools, and houses placarded.
- 6 No contagious disease appeared last year save peritonitis, which was epidemic.
- 7 a Undertakers are required to obtain certificate of death from attending physician, and procure burial permit.
  - b No record kept.
- 8 Of deaths only,
- 9 Where public school buildings were inspected and a better system of ventilation ordered and procured.
- 10 \$25.00.
- 11 Two.
- 12 About \$75,00.

#### CALDWELL-Population, 1,248-Dr. O. O. McKee, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d We don't allow adults who have been exposed to mingle with public until we think it safe,
  - c Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Inspect the premises and if needed order a regular cleaning up, Make the sick rooms as good as we can. Then have the stools disinfected.
- 4 Yes.
- 5. We stop all outside communication to that house, prevent the children from leaving their home, isolate those not affected from the afflicted ones.
- 6 No.
- 7 a None.
  - b None.
- 8 No.

- 10 \$50.00.
- 11 One.
- 12 \$183.35.

## CAMDEN-Population, 846-Dr. D. W. McQueen, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 None in particular, but some in a general way.
- 4 Yes.
- 5 Quarantine.
- 6 To some extent, but will hereafter.
- 7 a Through undertakers and physicians.
  - b We leave with each physician a supply of blanks for that purpose.
- 8 Will be.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 Nothing.

#### CANAL DOVER-Population, 3,470-Emanuel Amick, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Not strictly enforced.
  - g Yes.
- 2 Yes.
- 3. Avoid suspicious water supplies, sterilize excreta before disposing of it, correct all drainage and enforce cleanliness.
- 4 Yes.
- 5 Isolation.
- 6 Yes.
- 7 a From the sextons of the several cemeteries.
  - b No record.
- 8 Deaths, but not births.
- 9 Cleaning up the town and removing of offals, etc., followed by inspection.
- 10 \$15.00.
- 11 None.
- 12 \$57.35.

## CANAL FULTON-Population, 1,173-S. M. Buckmaster, Health Officer.

- 1  $\alpha$  Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- Do not have corpse taken in church nor allow visiting in house where patient or corpse is.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 a Clerk of board of health keeps it.
  - b Assessor gets them.
- 8 Births procured by assessor and deaths by health clerk.
- 9 Make a personal visit to all premises twice a year, and oftener when necessary.
- 10 \$20 per year.
- 11 None.
- 12 863.

#### CANAL WINCHESTER-Population, 633-Dr. L. W. Beery, Health Officer.

- 1 a Think it would.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Have had none, but think it would.
- 3 General cleanliness and disinfection of patient's stools.
- 4 Yes.
- 5 Quarantine.
- 6 No.
- 7 b Have supplied blanks to physicians, but no returns are made.
- 8 Not by board of health.
- 9 A considerable amount of tile ditching.
- 10 30 per annum.
- 11 One.
- 12 About \$60.

#### CARTHAGE—Population, 2,257—Harry Ross, Health Officer.

- 1 a Yes.
  - b Yes.
  - d To some extent, according to circumstances.
  - & Yes.
  - f Yes.
  - g Yes.
- 2 No.
  - 9 S. B. H.

- 3 We watch carefully all cess-pools, drains, cisterns and wells.
- 4 No.
- 5 Prevent them from attending school.
- 6 Only that which is sent you each week.
- 7 a Printed forms are furnished all physicians to make a return of each death.
  - b Printed forms are furnished all physicians to make a return of each birth.
- 8 Yes.
- 9 Three thousand feet of twelve-inch sewer for street and house drainage.
- 10 \$150.
- 11 None.
- 12 \$176.75.

#### CATAWBA-Population, 272-Dr. M. R. Hunter, Health Officer.

- 1 a Will do it.
  - b Yes.
  - c Yes.
  - d Yes.
  - e None.
  - f Will see to this.
  - g Yes.
- 2 No.
- 3 None, but the general cleaning up by board of health in June, 1893.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 Occasionally.
- 9 A general cleaning up of premises in June, 1893.
- 10 \$5 to \$10.
- 11 One.
- 12 Not reported to me.

#### CEDARVILLE-Population, 1,355-Gregory Weymouth, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Adults not strictly quarantined, but all possible precautions taken to prevent spread of disease.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Undertakers report all deaths to township clerk, who reports to the Board of Health.
  - b The Board of Health has taken no action in regard to a record of births.

- 8 Of deaths only.
- 9 None.
- 10 >50.00 per annum.
- 11 One.
- 12 \$92.50.

## CELINA-Population, 2,702-Dr. L. P. Lisle, Health Officer,

- 1 a Never have heretofore.
  - b Yes.
  - c Yes.
  - d Yes.
  - c Yes.
  - f Yes.
  - g Yes.
- 2 Never have.
- 3 None.
- 4 Yes.
- 5 Placarding, isolation, fumigation and disinfection.
- 6 Yes
- 7 a Attending physician reports deaths to the Health Officer and he keeps a record of date and cause,
  - b Attending physician reports all births to the Health Officer and he keeps a record.
- 8 Yes.
- 9 Privy vaults generally cleaned, streets and vacant lots cleaned.
- 10 \$36.00.
- 11 One.
- 12 \$9.60.

## CHESTER HILL-Population, 676-Dr. W. M. Barnes, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - c Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Through the attending physician.
  - b By physicians.
- S Yes.
- 9 None.
- 10 No salary fixed.
- 11 None.
- 12 About \$40.00.

## CHICAGO-Population, 1,299-Dr. D. H. Young, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection of the discharges and cleanliness.
- 4 Yes.
- 5 None in particular.
- 6 By the Health Officer.
- 7 a By reports of undertakers.
  - b By monthly reports of the doctors and midwives.
- 3 Ves
- 9 Only to keep clean.
- 10 No fixed one.
- 11 One.
- 12 About \$55.00.

## CLARINGTON-Population, 762-L. N. Timmons, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Quarantine house and placard same.
- 4 Yes.
- 5 Quarantine and placard the house.
- 6 Yes.
- 7 a The physician reporting to the clerk of Board.
  - b Same as above.
- 8. Yes.
- 9 Draining and removing filth.
- 10 \$20.00 per year.
- 11 None.
- 12 \$1.00.

## CLEVELAND-Population, 261,353-Dr. Geo. F. Leick, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.

- g Yes.
- 2 Yes.
- 3 Drainage, cleanliness and sewerage.
- 4 Ves
- 5 Isolatiou.
- 6 Yes.
- 7 α Superintendents of cemeteries required to have a permit from this office before interment.
  - b Sanitary officers call on all physicians and midwives for their reports.
- 8 Yes.
- 9 Enforcement to connect vaults to sewers where sewers are on streets and general cleanliness— yards, alleys, etc.
- 10 \$2,700.00
- 11 Twenty.
- 12 \$36,992.22.

## CLEVES-Population, 1,227-Dr. W. C. Hughes, Health Officer.

- $1 \alpha \text{ Yes.}$ 
  - b Yes.
  - c Yes.
  - d Yes, as far as possible.
  - $\epsilon$  Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Stop the use of contaminated water and disinfection of all discharges from patients.
- 4 Yes.
- 5 Placarding house, quarantine, and notification of superintendent of schools.
- 6 No, but a weekly report is sent to state board.
- 7 a Physicians are supplied with blanks to make such reports and notified to comply with the laws.
  - b Same as with deaths.
- 8 Yes.
- 9 Draining of some cesspools.
- 10 Nothing.
- 11 None, marshal of village.
- 12 \$70.00.

#### CLIFTON-Hamilton Co., Population, 1,575-Dr. Wm. Herbert Bell, Health Officer.

- 1 a It does.
  - b Yes.
  - c Yes.
  - d No.
  - c Yes.
  - f Yes.
  - g In some instances.
- 2 No.
- 3 Since the organization of the Board of Health, the cases of typhoid have been so few, that no steps for prevention have been deemed necessary.
- 4 Yes.

- 5 The same as for scarlet fever and dyphtheria.
- 6 Yes.
- 7 a Undertakers are required to have a certificate from the Board before the burial takes place.
  - b Physicians and midwives are required to report.
- 8 Yes.
- 9 None.
- 10 \$300.00.
- 11 One.
- 12 \$1,352.28.

#### CLYDE—Population, 2,327—Alex Harnden, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Quarantined and disinfected.
- 4 Yes.
- 5 Quarantined and disinfected.
- 6 Yes.
- 7 a A personal visit is made to all doctors in the village, each week to secure reports of deaths.
  - b A personal visit to doctors and midwives, every week.
- 8 Yes.
- 9 A trunk sewer.
- 10 \$7 per month.
- 11 None.
- 12 \$700.

## COLLEGE HILL-Population, 1,346—E. F. Smith, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.f Yes.
  - g Yes.
- 2 No.
- 3 There has been no typhoid fever.
- 4 Yes.
- 5 Isolation, house placarded.
- 6 Yes.
- 7 a A record has been kept as required by the Board.
  - b Record kept.
- 8 Yes.
- 10 Nothing.

- 11 None.
- 12 Nothing.

## COLLINWOOD-Population, 2,500-Dr. Alvan L. Waltz, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g No, but will hereafter.
- 2 Not strictly.
- 3 Have had no occasion for enforcing any radical measures.
- 4 Yes.
- 5 Quarantine children.
- 6 Yes.
- 7 a By a rule of the Board of Health.
  - b By a rule of the Board of Health.
- 8 Yes.
- 9 Enforced rules previously passed.
- 10 \$50.
- 11 One.
- 12 Incidentals and salaries, \$209.42; disposal of night soil, \$763.03.

## COLUMBUS-Population 88,150-Dr. D. N. Kinsman, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None specially.
- 4 No.
- 5 None.
- 6 Yes.
- 7 a Every undertaker or other person removing a corpse must secure permit from Health Officer.
  - b None.
- 8 Of deaths only.
- 10 \$1,500.
- 11 7
- 12 About \$8,000.

## COLUMBUS GROVE—Population, 1,677—Dr. W. H. Begg, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.

```
d Yes.
    e Yes.
   f Yes.
   g Yes.
  Yes.
3 Burying stools and looking after water supply.
5 Same as diphtheria and scarlet fever.
6 No.
   a Burial permits are required.
   b None.
8 Yes.
10 $80.00.
11 One.
12 No record.
       CONNEAUT-Population, 3,241-Dr. E. D. Merriam, Health Officer.
1 a Yes.
   b Yes.
   c Yes.
   d Yes.
   e Yes.
   f Yes.
   g Yes.
2 Yes.
3 Disinfection, pure water and pure air supply.
5 Placarding house and notification of superintendent of schools.
7 a From the undertaker in the issuing of permits.
   b Reports required of physicians monthly.
9 Completion of a splendid system of sewerage.
10 $150.00.
12 About $400.00
          CONVOY-Population, 500-Dr. R. L. Crooks, Health Officer.
 1 \quad a \quad \text{Yes.}
   b Yes.
   c Yes.
   d Yes.
   e Yes.
```

Yes.

3 Burying all discharges after disinfecting with wood ashes.

f Yes.

g By Health Officer.

5 Strict quarantine of patients infect ed.

6 Yes.

- 7 a Each physician makes his report or undertaker asks for permit.
  - b No.
- No.
- 9 Thorough drainage with tile. Closed or drove wells.
- 10 \$10.00.
- 11 Two.
- 12 About \$30.00.

## COSHOCTON-Population, 3,672-H. Blackman, Health Officer.

- 1 a Yes.
  - b Yes; order quarantine but have no police to enforce it.
  - c Yes, under same conditions as above.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- Yes.
- 3 Quarantine and disinfection. After death or recovery, fumigation.
- 4 Yes.
- 5 Placarding house.
- 6 No. I shall keep one this year.
- 7 a The clerk of Board keeps a record of deaths.
  - b The return of births has never been re uired by the Board.
- 8 No record of births.
- 9 There have been laid about 1,700 or 1,800 feet of private sewer, 8 inches in diameter.
- 10 \$360.00.
- 11 None.
- 12 \$400.00 or \$500.00.

## CRESTLINE—Population, 2,911—A. J. Cover, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d We enforce state rules.
  - e Yes.
  - f Always.
    - g Always.
- 2 Yes.
- 3 Enforce rules prescribed by State Board of Health.
- 4 Should any occur we will.
- 5 Will employ the manner recommended by State Board when any occur.
- 6 Complete record is kept.
- 7 a Record kept by secretary of Board from reports furnished by attending physicians.
  - b Attending physician furnishes the Board with same.
- 8 Yes.
- 9 Nuisance abated and a complete sewer system of the city nearly completed.
- 10 SI50.00.
- 11 One.
- 12 About \$500.00.

## CRIDERSVILLE-Population, 465-J. P. Church, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No.
  - d No.
  - e Yes.
  - f Yes.
  - g No.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 Placarding dwelling.
- 6 Yes.
- 7 a From physicians and undertakers.
  - b From physicians and midwives.
- 8 Yes.
- 9 None.
- 10 \$25.00.
- 11 None.
- 12 \$25.00.

## CUMBERLAND-Population, 601-Geo. E. McEndree, Health Officer.

- 1 *a* Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 Nothing but reports to State Board.
- 7 a The village is too small to require system.
- 8 No.
- 10 He is paid fees at discretion of council.
- 12 No financial reports.

## CUSTAR-Population, 329-Dr. M. Worline, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - a Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.,

- 3 Cleanliness. (Cleaned every well in town.)
- 4 Ves
- 5 Have had none, but would quarantine.
- i Yes.
- 7 a Notification by attending physician made obligatory.
  - b No.
- 8 Of deaths only.
- 9 Drainage and water wells made clean.
- 10 None.
- 11 None.
- 12 None.

#### CUYAHOGA FALLS-Population, 2,614-I. N. Reid, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes, if the house is large so patient can be removed.
  - d Yes, if the patient is not removed.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Causing all rubbish to be cleaned up and burned or carted away.
- 4 Yes, had none.
- 5 None.
- 6 Yes.
- 7 a Physicians are furnished with postal cards and undertakers furnished with printed blauks and no body can be removed or buried till the undertaker receives a permit from the health officer.
  - b Physicians are furnished with postal cards.
- 8 Yes.
- 9 The cleaning of alleys and back yards, privy vaults, sewers and the removing any contagious water.
- 10 \$25.00.
- 11 One.
- 12 Will not exceed \$25.00.

# DEFIANCE-Population, 7,694-Dr. P. H. Aldrich, Health Officer.

- 1 a Yes.
  - b Yes.
    - c Yes.
    - d Yes.
    - e Yes.
  - f Yes.
    g Yes.
  - g IC
- 2 Yes.
- 3 Carpets and window curtains removed, and the house disinfected once every day.
- 4 Yes
- 5 Quarantine.
- 6 Yes.
- 7 a Gotten from the city clerk's books.
  - b None.

- 8 Deaths, but not births.
- 9 Three hundred privy vaults connected with sewers, one hundred and fifty built of brick and cement, several rods of sewer and miles of street improvement.
- 10 \$240.00.
- 11 One.
- 12 \$150.00.

# DELAWARE—Population, 8,224—Dr. W. B. Hedges, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Has not been done. It is expected that it will be done hereafter.
- 2 Yes, it is required, but physicians have almost entirely neglected to do so.
- 3 Those advised by the attending physicians. Stoo's are not disinfected, and the use of polluted water often not forbidden.
- 4 This has not been required until this winter.
- 5 So far as can be done, the sick and those exposed are quarantined. Children in families affected are not allowed to attend school.
- 6 No.
- 7 a Blanks are furnished physicians, but they have been allowed to entirely neglect to comply with this rule. To remedy this, I have furnished addressed postal card blanks for contagious diseases and deaths to our physicians.
  - b Blanks are furnished to physicians, but no reports are made.
- 8 No
- 10 \$300.00 per year.
- 10 5500.0
- 12 \$500.00.

# DELTA-Population, 1,132-Dr. S. T. Worden, Health Officer.

- 1 a Only diphtheria.
  - b We do placard all houses reported.
  - c Quarantine all well children.
  - d Use all precaution the people will obey.
  - e Notification is regularly given.
  - f In all contagious diseases.
  - g Yes.
- 2 No.
- 3 Health commissioner on streets, alleys, privy vaults, slaughter houses and drains enforce the orders of council.
- 4 None reported yet.
- 5 Caution of physicians in attendance.
- 6 Partial.
- 7 a The reports of the attending physicians and undertakers, although not complete.
  - b No records kept.

- 8 Not fully.
- 9 Large sewers on Main street and Mill street also curbstone on Main. Drain tile put in and the water supply improved by bored wells from 100 to 120 feet deep.
- 10 No fixed salary.
- 11 The marshal and members of health board.
- 12 About twenty-five or thirty dollars.

#### DELPHOS-Population 4,516-Dr. J. M. Marsh, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d No person is allowed to go in or out of a quarantined house.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Thorough disinfection of stools of patient, investigation and abolishing of the source of infection.
- 4 No.
- 5 Children exposed and those in families having measles are kept out of the schools.
- 6 Yes.
- 7 a Undertakers are required to obtain from health officer, burial permits.
  - b None by Board.
- 8 Of deaths.
- 9 There have been 4,000 feet of sewer put in during year. Sanitary improvements in vaults in public buildings.
- 10 \$200 00 per annum.
- 11 One.
- 12 \$325.00.

#### DONNELSVILLE-Population, 300-Adam Cornwell, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d All persons in house are quarantined.
  - e No.
  - f Yes.
  - g Yes.
- 2 No.
- 3 Perfect cleanliness as far as possible, disinfection of home and destruction of all fecal matter of patient.
- 4 Yes.
- 5 Quarantine of all persons living in the room with patient, disinfection of house and patient.
- 6 Yes.
- 7 a None.
  - b None.
- 8 No.

- 9 The town was well cleaned up; all privy vaults cleaned and put in good repair and rubbish and debris removed.
- 10 \$10.00 per year.
- 11 None.
- 12 \$20.00.

DOYLESTOWN-Population, 1,131-Dr. A. E. Stepfield, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No.
  - d Disinfection.
  - e Yes.
  - f Yes.
  - g By attending physician
- 2 Yes
- 3 Cleanliness so far as possible. No cases during the past three years.
- 4 Yes.
- 5 Placarding house and keeping of children from school.
- 6 Ves
- $7 \cdot a$  All deaths are reported to the Health Officer before body is removed.
  - b All births are reported to the Health Officer by the physician or midwife in attendance.
- 8 Yes.
- 9 Fire escapes at school building and public hall. A number of sewers laid for the purpose of surface drainage.
- 10 \$35.00 per year.
- 11 One when anything is needed.
- 12 \$45.50.

### DUPONT-Population, 531-Isaac Staley, Health Officer.

- 1  $\alpha$  Yes.
  - b Yes.
  - c We try to.
  - e Yes.
  - f Yes.
  - g The board has not as yet.
- 2 Yes.
- 3 Cleanliness, pure water, and bad garbage removed.
- 4 Yes.
- 5 We in the first place quarantine the house; but one of our teachers, while scaling, brought them here and gave them to the school.
- 6 No.
- 7 a By doctors.
  - b By doctors.
- 8 No.
- 9 Removed all garbage. Looked after water supplies and privies. Our town is in a good sanitary condition.
- 10 \$1.50 per day when needed.
- 11 None.
- 12 \$1.37.

EAST LIVERPOOL-Population, 10,956-J. T. King, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Will this year.
- 7 Keep a record and require a permit for burial from undertaker.
  - b Keep a record and require report from doctor.
- 8 Yes.
- 9 Nothing in particular.
- 10 \$50.00 per month.
- 11 None.
- 12 \$7.00.

### EAST PALESTINE—Population, 1,816—H. A. Gray, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No; only from school.
  - d They are advised not to go into public places or into crowds.
  - € Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Nothing special.
- 4 Yes.
- 5 Only placarding house.
- 6 Yes.
- 7 a There has been some trouble in getting the undertaker to report but he is coming to it now.
  - b None.
- 8 Deaths but not of births.
- 9 A lot of tile draining was done in different parts of the village and the gutters on streets and alleys were well attended to.
- 10 Health officer and secretary \$30.00.
- 11 One, at fifteen cents per hour.
- 12 About 49.00.

### EAST SPRINGFIELD-Population, 197-Dr. Geo. R. Wycoff, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes
  - e Yes.

- f Yes.
- g Yes.
- 2 Yes.
- 3 None. There has not been a single case of acute infectious disease in our village since our board was organized.
- 6 There would be if any occurred.
- 7 a None. No deaths have occurred since our organization.
  - b None. I have attended all cases of labor since our organization and have a record.
- 9 None have been made.
- 10 He receives no salary.
- 11 None.
- 12 Have no money at our command.

# EDGERTON-Population, 967-Dr. Calvin Hathaway, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Use disinfectants, emptying the vessels containing secretions at once.
- 4 Yes.
- 5 Quarantining of sick.
- 6 No.
- 7 a Not any.
- 9 We have a sandy soil and good drainage. The town is pretty well policed.
- 10 Nothing.
- 11 None.
- 12 Not a cent except in a general way.

#### ELIDA—Population, 399—Dr. S. A. Hitchcock, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes. f Yes.
  - g No.
- 2 Within the corporation.
- 3 Cleanliness, removal of all filth and garbage; opening up of sewers, cleaning
- 4 Yes.
- 5 Isolate the patient, allow no one to go to or come from the house.
- 6 None by our board.
- 7  $\alpha$  We have not taken any steps to secure reports of deaths.
  - b Nor of births.

- 8 No strict record.
- 9 The village has been kept in a cleanly condition; barnyards and privies cleaned and all filth removed.
- 10 Nothing.
- 11 All of the health board.
- 12 Most of the work done gratis.

# ELMORE—Population, 1,198—Dr. S. T. Dromgold, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d. Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 All discharges are disinfected as ordered by State Board of Health. Al nuisances abated and privy vaults renovated and disinfected—also remove, decaying organic matter.
- 4 Yes.
- 5 The same as for other contagious diseases.
- 6 Yes.
- 7 a Physicians are required to report all deaths to health officer.
  - b Physicians are required to report all births to health officer.
- 8 No.
- 9 The thorough execution of all sanitary laws. Our present sanitary condition is first class.
- 10 \$1,00 per month.
- 11 One.
- 12 About \$30.00.

### ELMWOOD-Population, 1,980-John H. Bart, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d No.
  - e Yes.
  - f Yes.
  - g No; disinfection of house under attending physician,
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Without certificate of death from health officer no burials are permitted in our cemeteries.
  - b Physicians and midwives are furnished blanks and required to report.
- 8 Yes.
- 9 Two sewers have been built and every street in the village has been graded and macadamized; all garbage is collected twice a week and disposed of and all vaults and cellars in village inspected.
  - 10 S. B. H.

- 10 \$8.00 per month.
- 11 One.
- 12 \$202.50.

### ENON-Population, 331-Dr. Elwood Miller, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Have had no occasion to quarantine adults.
  - e Yes
  - f Yes.
- g No arrangements have been made.
- 2 Yes.
- 3 None of special character.
- 4 Yes.
- 5 Quarantine only.
- 6 Yes. 4
- 7 a Furnish blanks for such reports.
  - b Furnish blanks for such reports.
- 8 Not been enforced.
- 10 37c, for each report and each case visited.
- 11 None.
- 12 \$52.22.

### FAIRPORT HARBOR—Population, 1,171—D. A. Lewis, Health Officer.

- 1 a Yes.
  - b Yes.
  - c As thorough as possible without a guard over residence.
  - d Some adults have been kept from house and others kept in house with goods delivered by officers.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 General disinfection required.
- 4 Yes
- 5 Quarantine of residence and expulsion of children from same residence from public schools.
- 6 Yes.
- 7 a Every death is reported to health officer.
  - b Every birth is reported to health officer.
- 8 Yes.
- 9 Thorough drainage and keeping town as neat and clean as possible.
- 10 \$90.00 per year.
- 11 None.
- 12 About \$160.00.

#### FELICITY-Population 779-C. E. Houghton, Health Officer.

- 1 a Yes,
  - b Yes.

- c Yes.
- d Yes.
- e Yes.
- f Strictly so.
- g Yes.
- 2 Yes.
- 3 None in particular.
- 4 Yes.
- 5 We quarantine to a certain extent.
- 6 Yes.
- 7 a Physiciaus and undertakers are required to report them.
  - b Physicians report them.
- 8 Yes.
- 9 None.
- 10 \$25.00 per year.
- 11 One.
- 12 About \$100.00.

# FINDLAY-Population 18,553.-Amos Beardsley, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - / Yes.
  - g Yes.
- 2 Yes.
- 3 Houses are placarded and premises thoroughly inspected, and the cause, if it can be found, removed.
- 4 Yes.
- 5 Houses are quarantined and well children not permitted to attend school.
- 6 No.
- 7 a Collected from the undertakers by health officer.
  - b None.
- 8 No.
- 9 Half mile of sewer.
- 10 \$45.00 per mouth.
- 11 One at present.
- 12 \$4,000.00, including expense of running crematory.

#### FITCHVILLE-Population, 250-Dr. E. L. Burton, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.

3 None. Yes. 5 Moderate quarantine where disease actually exists. 6 Yes. 7 a None. b None. 8 None. 9 None. 10 \$25.00. 11 None. 12 \$30.00.

### FOREST-Population, 1,126-Dr. W. N. Mundy, Health Officer.

- 1 a Yes. b Yes. c Yes, in separate rooms generally. Patient in upper rooms if possible d Yes. e Yes. f Yes. g Yes. 2 Yes. 3 Cleanliness of premises and patient. Disinfection of discharge.
- 5 Endeavor to quarantine. More difficult to do so with diphtheria and scarlatina.
- 7 a Physicians report within twenty-four hours. b Physicians report monthly.
- 8 Yes.
- 9 Repair of defective sewerage.
- 10 Paid according to time employed.
- 11 Oue.
- 12 \$59.48.

# FOSTORIA-Population, 7,070-J. O. Hess, Health Officer.

- 1 a Yes. b Yes. c Yes. d Yes. e Yes. f Yes, strictly. g Yes. 2 Yes.
- 3 Cleanliness and pure water.
- 5 With the aid of the attending physician, quarantine.
- 7 a Physician's certificate, and permit for burial given by Board of Health.
  - b No record.
- 8 Deaths only.

- 9 About fourteen miles of sewer. Liming of foul places and strictly enforcing cleanliness in all parts of city.
- 10 \$547.50.
- 11 Health Officer fills place.
- 12 \$840, including salary of health officer, sanitary police, milk and meat inspector and vegetable inspector.

# FOWLER--Population, 175-C. D. Williamson, Health Officer.

- 1 a Yes.
  - b Yes.
  - d Yes, quarantine.
    - e Yes.
  - f Yes.
- 2 Yes.
- 3 Quarantine.
- 4 Yes.
- 5 Placarding house giving nature of disease.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 12 None.

# FRANKFORT—Population, 667--Dr. J. O. Hoffhine, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Disinfection and fumigation by health officer.
- 2 Yes
- 3 Every measure is enforced to keep the town in a perfectly healthful condition all the time.
- 4 Yes.
- 5 Quarantine the houses and allowing no ingress or egress to the premises as best we can.
- 6 Yes.
- 7 a The physicians and undertakers are supplied with blank reports and we allow no burials without a permit.
  - b Every physician is supplied with blanks and the health officer collects the reports every thirty to ninety days.
- 8 Yes.
- 9 Only in the way of drainage.
- 10 \$80
- 11 None been required so far.
- 12 \$150.

#### FREDERICKSBURG-Population, 600-D. Cooper, Clerk.

- 1 a Yes.
  - b Yes.
  - c No cases for its requirement.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
  - Yes. But no cases to report.
- 3 A general cleaning up of filth and rubbish.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 General cleaning by resolutions passed by Board.
- 10 No fixed amount.
- 11 None.
- 12 \$7.10.

## FREMONT-Population, 7,141-Dr. J. D. Bemis, Health Officer.

- $1 \quad a \quad \text{Yes.}$ 
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g By sanitary police.
- 2 We require it and have but one physician who refuses.
- 3 Isolation of patient, sanitary precautions of State Board.
- 4 Yes.
- 5 Quarantine.
- 6 Only on report cards.
- 7 a Undertaker must file death certificate and receive burial permit before moving a corpse,
  - b Physicians absolutely refuse to report births and no effort has been made in the past two years.
- 8 Yes. No record of births outside of assessor's returns.
- 9 One trunk sewer, seven-eighths of a mile, one-half mile of brick paving, two blocks of loose-joint (open) sewer removed and collar joint (cemented) substituted.
- 10 \$300.
- 11 One; salary \$550.
- 12 \$1,150.

#### GAHANNA-Population, 207-Dr. J. Cliuch, Health Officer.

- 1 Yes.
  - a No.
  - b Yes.

- c Yes.
- d No.
- e No.
- g Yes.
- 2 Yes.
- 3 Cleaning up hog peus, slaughter houses; disinfection with lime and removing all putrid substances.
  - Yes.
- 5 Cleanliness, disinfection.
- 6 No.
- 7 a Not any, only by the Health Officer.
  - b Not any, only by the Health Officer.
- 8 Yes.
- 9 Everything is in good condition. The hog pens, slaughter houses and filth removed.
- 10 \$12.00 yearly.
- 11 One.
- 12 \$42.60.

### GALLIPOLIS-Population, 4,498-Dr. E. Westlake, Health Officer.

- 1 a Yes.
  - b Yes.
  - d Not rigid.
  - e Yes.
- f Not private.
  - g By order of attending physician.
- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 Record of causes of deaths not separate.
- 7 a By requiring a certificate of attending physician to Health Officer.
  - b None.
- 8 Of deaths only.
- 9 None.
- 10 Seventy-five dollars per year.
- 11 None.
- 12 One hundred and twenty-five dollars.

#### GARRETTSVILLE-Population, 1,046-Dr. C. A. Snow, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Under supervision of physicians.
- 2 No.
- 3 Have not had a case in town in nine years.
- 4 Yes.
- 5 Quarantine and closing public schools.

- 6 Yes.
- 7 a A certificate from attending physician and undertaker.
  - b A certificate from attending physician.
- 8 Yes.
- 11 One for five days.
- 12 Five dollars and fifty cents.

#### GIBSONBURG-Population, 585-A. E. Ferguson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Not allowed to go in public with clothes worn in sick room.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Everything that can be done.
- 4 Yes.
- 5 Disinfection and quarantine.
- 6 Yes.
- 7 a Physician is required to report, and also undertaker.
  - b Physicians have been asked to report.
- 8 Yes
- 9 Changing privy vaults dug in ground to up ground and water-tight drawers.
- 10 None.
- 11 None.
- 12 About twelve dollars.

#### GILBOA-Population, 264-Dr. M. A. Darbyshire, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g No.
- 2 Yes.
- 3 Proper drainage of cess pools, cleaning garbage, and all filth from alleys, cleaning privy vaults.
- 4 Yes.
- 5 Quarantine the house.
- 6 No.
- 7 a Required a certificate of death to be placed on file with the Health Officer before a burial permit will be issued.
  - b By notifying all physicians that such a report is desired.
- 8 A record of deaths is kept, but not of births.
- 9 None.
- 10 Such compensation as the Board stipulates.
- 11 One.
- 12 \$25.

### GIRARD-Population, 2,700-Dr. A. J. Brooks, Health Officer.

- l a Yes.
  - b Yes.
  - c Children are strictly quarantined.
  - d We instructed them to keep disinfected.
  - e We notify superintendent.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We examined the wells and springs which are generally the cause.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 a The attending physician fills out certificates of cause of death and the Health Officer records in book.
  - b Each physician has blanks; when a birth occurs he sends the blank to Health Officer and it is recorded.
- 8 Yes.
- 9 We have a strict law compelling every one to have water tight privy vaults, make visits in a body around the town and look into cellars, alleys, privy vaults, etc.
- 10 One hundred dollars.
- 11 One.
- 12 The pay of Health Officer, \$100. Sanitary police, \$100. Clerk, \$30, stationery of clerk and sanitary police about \$275.00.

#### GLENDALE—Population 1,444—E. A. Sayre, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Isolation and thorough disinfection of excreta.
- 4 Yes.
- 5 The same as other infectious diseases.
- 6 Yes.
- 7 a A proper report must be filed with Health Officer before burial permit is issued.
  - b The sanitary police call for them each month.
- 8. Yes.
- 9 Erection of water works supplying the village with artesian well water and the draining and cleaning of a small lake in the heart of the village.
- 10 \$100 per year
- 11 One.
- 12 About \$200.

GLENVILLE-Population, 1,616-Jno. T. Rains, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2. Yes.
- 2 All stools are thoroughly disinfected and buried far from any well, also bed linen is boiled in disinfecting solutions or burned.
- 4 Yes
- 5 No children allowed at school from houses containing cases of measles; with thorough disinfection an I fumigation of patient's clothing and house.
- 6 Yes.
- 7 It is made obligatory for all physicians and midwives to report all deaths and births.
- 8 Yes.
- 9 Proper construction and location of all privy vaults; several containing stagnant water have been drained.
- 10 Seventy-nine dollars per year.
- 11 Two.
- 12 \$333.48.

GLOUSTER-Population, 2,000-Dr. J. M. Rhodes, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Have had none in last year.
- 3 Have had none.
- 4 Yes.
- 5 Quarantine.
- 6 No.
- 7 a None.
  - b None.
- 8 In my own practice, yes.
- 9 General cleaning up about once per month. There is more care taken in the construction of vaults than formerly.
- 10 \$60.00 per annum.
- 11 None.
- 12 Only the salary of Health Officer.

GRAND RAPIDS--Population, 572-William Mailey, Health Officer.

- 1 a Within twelve hours.
  - b Immediately.
  - c If exposed; and all others unless head of family at work.

- d If head of family has work separate and apart from others is allowed to continue.
- e Yes.
- f Always.
- g Yes.
- 2 No.
- 3 We have no typhoid fever and but little of any low grade of fever.
- 4 Ves.
- 5 Have had none since organization of the board.
- 6 Yes.
- 7 a Application for permits to bury.
  - b Have enforced none.
- 8 Yes, of deaths.
- 9 Thorough cleaning of privy vaults.
- 10 Paid by the day—for '93, \$5.00.
- 11 Only Health Officer.
- 12 \$15.00.

### GRAND RIVER-Population, 200-James H. Averill, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Enforcing good sanitary condition of all premises.
- 4 Yes
- 5 Same as for typhoid fever.
- 6 Yes.
- 7 a Village is small and health office has cognizance of deaths.
  - b Same as above.
- 8 Yes.
- 9 No public improvements necessary. Nuisances on private property were abated by order of the board.
- 10 \$90.00 per annum.
- 11 None.
- 12 \$134.90.

#### GREEN CAMP-Population, 290--Dr. F. W. Moses, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We use all sanitary precautions, examine the water supply and abate all nuisances.
- 4 Yes.

- 5 Quarantine the children of the family. Placard the house.
- 8 Ves.
- 7 a The rules of the board require the attending physician to report all deaths, and the cause or causes of death.
  - b The attending physician is required to report the births. Sometimes no physician is called, consequently a number of births are not reported.
- 8 Yes.
- 9 Abating a couple of nuisances in the way of overfull water closets, and seeing that the alleyways and premises are kept clean.
- 10 I do not know.
- 11 One.
- 12 \$18.06.

#### GREENVILLE-Population, 5,473-Dr. A. M. Rush, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes, we separated the patient from the rest of the family.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We notify the people of the contagiousness of the disease and have the premises disinfected.
- 4 Ves
- 5 We quarantine the patients the same as in scarlet fever and diphtheria.
- 6 Yes
- 7 a The undertakers are required to secure a burial permit from this office be fore burying the body.
  - b We have blank postal cards distributed among the physicians and notify them to fill in the name of parents and child and mail to Health Officer.
- 8 Ves
- 9 The city put in water works last year and we now have an abundant supply of as pure water as can be found anywhere. We get our water from wells.
- 10 \$200.00 per year.
- 11 One.
- 12 From May 1, 1893, to March 1, 1894, our expenses were \$1,207.43. No account of expense was kept before that time.

#### GREENWICH-Population, 881-R. H. Reynolds, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e No.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None.
- 4 No.

5 None. 6 No. 7 a None. b None. S No. 9 None. 10 Nothing. 11 None. 12 None. GROVE CITY-Population, 400-Chas. McGiven, Health Officer. 1 a Yes. b Yes. c Yes. d Yes. e Yes. f Yes. g Yes. 2 No. 3 No cases occurred since Board was organized. 5 No cases reported. 6 No. 7 a None. b None. 1 Households ordered to disinfect vaults. 11 None. 12 Nothing. GROVER HILL-Population, 250-Chas. A. Bray, Health Officer. 1 a Yes. b Yes. c Yes. d Yes. e Yes. f Yes. Yes. 3 Look after cesspools and uncleanliness. 4 Yes.

5 None
 6 No.
 7 a None.
 b None.
 8 No, sir.

10 Nothing. 11 One 12 \$5,00

9 None except drainage.

#### HAMDEN-Population, 622-J. T. Barrett, Health Officer.

- 1 a Yes.
  - b Yes.
  - d Yes.
  - e Yes.
  - f No.
  - g Yes.
- 2 We have had no fever.
- 3. Nothing.
- 4 We have had no measles.
- 6 Yes.
- 7° a A book.
  - b A record.
- 9 Nothing.
- 10 Nothing.
- 11 None.
- 12 \$3.10 for disinfection.

#### HAMILTON—Population, 17,565—P. E. Welsh, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection and quarantine.
- 4 Yes.
- 5 Quarantine,
- 6 Yes.
- 7 a All deaths are reported to board by undertakers before interment.
  - b Reported by physicians and midwives on blanks furnished by board.
- 8 Yes.
- 9 None.
- 10 Health officer, \$720 per annum; clerk, \$300.
- 11 None during winter.
- 12 The present board has only been in existence since September 1, 1893.

# HAMLER, Population, 556-Dr. L. J. Eger, Health officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes. g Yes.
- 2 No.

- 3 None.
- 4 No.
- 5 None.
- 6 None.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 Nothing.

# HANGING ROCK-Population, 846-Joseph Kinkaid, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Parents are allowed to go to and from house.
  - e Yes
  - g No.
- 2 Yes.
- 3 None.
- 4 We have had none.
- 6 No.
- 7 a Reported by attending physician.
  - b Reported by physician.
- 8 No.
- 10 One dollar per month.

#### HARRISON-Population, 1,690-Board of Health.

- 1 a There have been no cases during the year.
- 2 No cases.
- 3 None.
- 4 No. No cases.
- 5 None.
- 6 No.
- 7 a Reports taken from undertakers and doctors.
  - b Physicians report.
- 8 We are about to commence.
- 9 Our village is kept clean by a street commissioner, who is also marshal and Health Officer. By abatement of nuisances.
- 10 None.
- 11 Not to exceed \$10.00.

#### HARROD-Population, 269-D. P. Selleck, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Schools are closed.

e Yes. f None. 2 No. 3 None.

5 None. 6 No.

4 There has been no measles.

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   f Yes.
   g Yes.
 2 No action taken by Board.
3 No measures taken; have not had a case since Board has been organized.
5 No preventive measures,
   Yes.
  a The attending physician is compelled to report all deaths.
   b All births reported by attending physician.
9 No improvements in the last year.
10 $2.00 per day.
11 One.
12 $70.00.
           HEBRON-Population, 415-Dr. R. Bonar, Health Officer
  a Yes.
   b Yes.
   c Yes.
   d Yes.
   e Yes.
   f Yes.
   g Yes.
2 There has been no typhoid in the village since Board was organized.
3 None, except general sanitary measures.
5 Have had no measles, but would exclude all suspects from school and other pub-
     lic gatherings. I would not quarantine.
6 Yes, when quarantined.
  a The sanitary policeman waits on the physicians at the end of each month,
        with proper blanks and secures his report and returns to Health Officer.
   b Same.
8 No, but are reported to State Board.
  Our Board has been in operation about three months, and no public improve
     ments of sanitary character have been made.
10 $15.00 per year.
11 One.
12 None.
         HERRING-Population, 350-J. B. McWilliams, Health Officer.
  a Yes.
   b Yes.
   c Yes.
   d Yes.
```

```
7 a None.
8 No.
9 Nothing only in way of drainage.
10 Nothing.
11 None.
12 About $1.50 for the clerk's fees.
         HICKSVILLE-Population, 2,141-S. Blodgett, Health Officer.
1 a Yes.
   b Yes.
   c Yes.
   d Yes.
   e Yes.
   f Yes.
   g Yes.
2 Yes.
3 Good sanitation. Disinfection after death or disease.
   No.
6 Yes.
7 a Through physician's reports.
   b Same.
8 Yes.
9 Improved drainage and scavenger service.
10 $24.00.
11 One.
12 Money all appropriated through village council.
     HIGGINSPORT—Population, 764—Dr. J. H. Williamson, Health Officer.
   a Yes.
   b Yes.
   c Yes.
   d Yes.
   e Yes.
   f Yes.
   g Yes.
   Yes.
 3 Disinfection and cleanliness.
 5 None. Have had no measles for three years within corporation.
 6 No.
   a None are kept other than by township assessor, which he gathers once a year,
    b Same.
   No.
 9 Cleaning sewers and removing filth of privy, stables, etc.
10 None.
11 One or more as needed.
12 About $100.00 for police.
          HILLSBORO-Population 3,620-H. M. Brown, Health!Officer.
 1 a Yes.
    b No.
    c Yes.
```

d Yes.11

S. B. H.

- e Yes. f Yes. g No. 2 No. 3 None. 4 Yes. 5 Quarantine after case is reported. 6. Yes. 7 a None. b None.
- 8 No. 9 None, except to abate all public and private nuisances.
- 10 \$50.00.
- 11 One.
- 12 About three or four hundred dollars.

### HOLGATE-Population, 1,134-J. D. Archer, Health Officer.

- 1 a No. b No. c No d No. e Yes. f They have tried to. 2 No.
- 3 None.
- 4 We requested it, but never received any. 5 None.
- 6 No.
- a We have furnished undertakers and physicians with blanks to be filled and returned to health officer, but it is never done.
  - b No reports ever made.
- 8 No.
- 9 None.
- 10 Nothing.
- 11 One.
- 12 None.

### HOPEDALE—Population, 424—Dr. L. A. Crawford, Health Officer.

- $1 \alpha \text{ Yes.}$ b No. c Yes. d Yes. e No. Yes. No. g 2 No
- 3 None.
- 4 No.
- 5 None.

- 6 No.
- 7 a A death certificate is given by the attending physician to undertaker and he reports to clerk who records all deaths and causes of same.
  - b No record of births kept.
- 8 Only of deaths.
- 9 Orders made that a general cleaning up of all garbage, etc., and the orders were enforced once; since then nothing done.
- 10 Nothing.
- 11 None.
- 12 Nothing.

#### HUBBARD-Population, 1,498-Dr. W. S. Bond, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection of stools.
- 4 Yes
- 5 Placarding of house.
- 6 Yes.
- 7 a · Requiring burial permit.
  - b Report from physicians and midwives.
- 8 Yes.
- 10 \$13.00 per month.
- 11 One.
- 12 Dou't know.

#### HUDSON-Population, 1,143-L. D. Osborne, Health Officer.

- 1 a No.
  - b Yes.
  - c Yes.
  - d By Health Officer.
  - e Yes.
  - f Yes.
- g Under supervision health officer.
- 2 Yes
- 3 Notification of health officer.
- 4 Yes.
- 5 Notification of health officer.
- 6 So far as reported.
- 7 From funeral directors.
- 8 Record of deaths.
- 9 Nothing.
- 10 \$50.
- 11 One.

#### HURON-Population-1,380-Dr. J. H. Calvin, Health Officer.

- 1 a Yes.
  - b Yes.

- c Yes.
- d Yes.
- e Yes.
- f Yes.
- g By health officer.
- 2 Yes.
- 3 Disinfection of dangerous substances, boiling of suspected water, etc.
- 4 Ves
- 5 Isolate patients and those exposed to the disease, when such persons have not had them.
- 6 Yes.
- 7 a Undertaker not to bury without a permit to do so. Physician in attendance \( \) at time of death to fill out a prescribed form.
  - b All to be reported with age, etc.
- 8 Yes.
- 9 Drainage. Have street commissioner drain and keep streets and drains clean, as I can. Counsel protest, but he is ordered to comply with law.
- 10 Fifty dollars and pay for special services.
- 11 One.
- 12 Very little.

IRONTON-Population, 10,939-Dr. N. K. Moxley, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No.
  - d No.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 The only preventive measures taken are those which the attending physician dictates.
- 4 Yes
- 5 Children from the home where there is a case of measles are not allowed to attend the public schools.
- 6 Yes.
- 7 a Undertakers are supplied with blanks to be filled by physicians as to cause of death, date and name and length of sickness of decedent. Also age, place of birth, nativity, date and place of burial.
  - b None.
- 8 Records of deaths only.
- 9 A large sewer built almost from one end of our city to the other; also a good many cross town sewers connecting with the large sewer.
- 10 \$100 per annum.
- Il One.
- 12 \$1,221.09.

JACKSONVILLE-Population, 727-Dr. W. W. Wolfe, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.

- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 We have not had a case this last year.
- 4 Yes.
- 6 No.
- 7 a By not letting them enter the cemetery or ship by railroad until they obtain a permit from health officer.
- 8 No.
- 9 Nothing.
- 10 No salary.
- 12 Nothing.

### JAMESTOWN-Population, 1,104- Dr. F. W. Ogan, Health Officer.

- 1 a Yes (we attempt to).
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Not always under supervision of Board.
- 2 Yes.
- 3 Disinfection of stools and thorough cleanliness.
- 4 Yes.
- 5 Isolation of patient and quarantine of family.
- 6 No.
- 7 a We attempt to enforce burial permits but can't do it entirely.
  - b Distribute blank birth reports and gather them in monthly and record them.
- 8 Yes.
- 10 \$60 per annum.
- 11 One.

#### JEFFERSONVILLE-Population, 1,132-Dr. C. A. Teeters, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None.
- 4 Have had no measles for years.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 None.
- 11 None.
- 12 About \$75.

#### JEWETT-Population, 506-J. R. Roberts, Health Officer.

- $1 \quad a \quad \text{We do.}$ 
  - b Yes. .
  - g Yes.
- 2 Yes.
- 4 Yes.
- 6 Yes.
- 7 a By attending physician.
  - b By attending physician.
- 8 Yes.
- 10 None.
- 11 None.

#### JUNCTION CITY-Population, 394-Dr. P. A. Gordon, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Require fumigation, etc.; but have not superintended yet.
- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 A general cleaning up of streets, alleys and premises (which are kept clean), considerable amount of sewerage along streets, draining of ponds or swails in vicinity, or within the incorporation.
- 10 None fixed.
- 11 None. Health officer looks after it.
- 12 Don't know.

#### KENT—Population, 3,501—Dr. P. B. Mead, Health Officer.

- $1 \alpha \text{ Yes.}$ 
  - b Yes.
  - c When the children can't be kept separate from the sick ones.
  - d Yes.
  - e Yes.
  - f Yes, and at night.
  - g Yes.
- 2 Yes.
- 3 Cleanliness.
- 4 Yes
- 5 Very little can be done as the disease is not looked upon as dangerous.
- 6 No.

- 7 a Through the undertaker.
  - b Have no record.
- S No.
- 9 None.
- 10 \$100 per year.
- 11 None.
- 12 April to December 31, 1893, \$125.

#### KIMBOLTON-Population, 261-Samuel D. Ross, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 6 We expect to keep a record of same.
- 8 We expect to keep a record of above.
- 9 None.
- 10 Nothing.
- Il None.
- 12 None.

# LAGRANGE-Population, 532-Dr. G. N. Snyder, Health Officer.

- a No.
  - b No.
  - c No.
  - d No.
  - e No.
  - f No.
  - g No.
- No.
- 3 Not any.
- 4 No.
- 5 Not any.
- 6 No.
- a Not any.b Not any.
- 8 No.
- 9 Not any.
- 10 Nothing.
- 11 None.
- 12 Not any.

#### LARUE-Population, 948-M. V. Toner, Health Officer

- 1 a Yes, and under penalty of arrest if they do not notify.
  - b Yes, cards not taken down until ordered by physician and then by health officer after disinfection.

- c Quarantine everybody.
- d Yes.
- e Yes.
- f Yes.
- g By the health officer.
- 2 No.
- 3 None by Board of Health.
- 4 Yes.
- 5 Quarantine.
- 6 None only by certificate of death.
- 7 a We keep no reports only by certificate.
  - b None.
- 8 None.
- 9 Our town is situated on a flat and is thoroughly underdrained, to the rivers. We have no surplus water remaining on our streets and where there was any, it was carefully looked after and under draining was resorted to. No manure or filth of any kind is permitted to remain and privys are kept clean.
- 10 Thirty dollars.
- 12 Forty dollars.

# LANCASTER—Population, 7,555—Dr. J. P. Hershberger, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g 'Yes.
- 2 No.
- 3 None at present.
- 4 No.
- 5 None.
- 6 Yes.
- 7 a Require physicians' certificates of death and issue burial permits.
  - b None.
- 8 Of deaths only.
- 9 Built 1,000 feet of sewer.
- 10 \$200.
- 11 None.
- 12 About \$300.

### LATTY—Population 594-H. T. Jones, Mayor.

- 1 a Yes.
  - b Yes.
- 3 None needed here; we have had two cases of walking typhoid fever.
- 4 Yes
- 5 Placarding the building.
- 6 No.
- 7 a No record by the Board.
  - b No record by the Board.

- 9. None.
- 10 No salary.
- 11 One.
- 12 Not any.

# LEBANON-Population, 3,050-Dr. F. H. Frost, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes
  - c Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Nothing special, only in a general way.
- 4 Yes.
- 5 Nothing special
- 6 None was kept before this year.
- 7 a A burial permit has to be obtained in all cases from the health department, application for which must be accompanied by physician's certificate.
  - b The penalty is enforced for failure.
- 8 Yes.
- 9 None.
- 10 \$100.
- 11 None.
- 12 \$238.96.

#### LEESBURG-Population, 373-Dr. H. A. Beeson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d No.
  - € Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Investigation of water supply, general cleaning up and disinfection.
- 4 Would if any.
- 5 None. Under favorable conditions don't try much to prevent children having it. Try to guard school.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 No salary.
- 11 None.
- 12 None.

LEETONIA-Population, 2,826-Dr. S. R. McCready, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- Yes.
- 3 Notification by attending physician. House is placarded and quarantined. Superintendent of schools is notified. In case of death funeral is private. House disinfected under supervision of board.
- 4 When physician is called we do, but in many cases a physician is not called.
- 5 Pupils are not allowed to attend school from a house where measles exist.
- 6 Reports are put on file when received but no book record is kept.
- 7 a No person is allowed to convey a corpse to or from the village for burial or other purpose without a permit from the board of health.
  - b Sanitary police calls on every physician in town at the end of each month for monthly report of births.
- 8 Yes.
- 9 No public improvements of a sanitary character have been made during the year further than filling up and draining cosspools, ponds, etc.
- 10 \$75 per annum.
- 11 One.
- 12 About \$200.

LEIPSIC-Population, 1,353-Dr. John C. McClung, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.,
- 2 No.
- 3 General sanitation only.
- 4 Yes.
- 5 None.
- 6 No.
- 7 a Issue permit to undertakers when physicians certificate is fiied with Board of Health.
  - b None.
- 8 No.
- 9 About two miles of sewerage.
- 11 One.
- 12 \$136.25.

LEXINGTON-Population, 432-Dr. J. P. Stober, Health Officer.

- 1 a Yes.
  - b Yes.

- c Yes.
- d Adults that wish to leave the house are not allowed in sick rooms. Disinfectants are used.
- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 Try to keep village in good sanitary condition and when it exists we follow all instructions given in circular on typhoid fever issued by State Board.
- 4 Have had no measles since organized but will require report.
- 5 Would isolate as much as possible and quarantine house.
- 6 Yes.
- 7 a I keep a record of deaths.
  - b We have kept no record of births but we could secure a record I think.
- 8 Of deaths but not of births.
- 9 There have been none. Board was organized June 30, 1893.
- 10 Fifty dollars a year.
- Il None.
- 12 \$48.50.

### LIMA—Population, 15,981—Dr. L. J. Stueber, Health Officer.

- 1 a Yes.
  - b Yes.
  - ι Yes.
  - d Yes.
  - e No, the teacher.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None.
- 4 Yes.
- 5 None.6 Yes
- 7 a Board of Health permits no person buried unless permission is given health officer; in that way we have a request for burial permit which request must be accompanied by a death certificate.
  - b None.
- 8 Deaths.
- 9 Ottawa river was cleaned of debris, etc.; all sewer drops tapped. All vaults must be lined.
- 10 \$300.
- 11 Three.

#### LINWOOD-Population, 1,291-Dr. W. S. Reynolds, Health Officer.

- 1 a Yes.
  - b Yes.
  - c As much as possible.
  - d As much as possible.
  - e Yes.
  - f Yes.
  - g Yes.

- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Postal cards are furnished physicians practicing in the village, with penalty for failure to report.
  - b Same as deaths.
- 8 Yes.
- 9 None.
- 10 None.
- 11 None.
- 12 Cannot tell, all bills paid by council.

### LOGAN—Population, 3,119—Dr. I. C. Wright, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes
  - d Require business persons to keep out of sick room.
  - e Yes.
  - f Yes.
  - g No.
- 2 Ves
- 3 Precautions are taken to separate the sick from the well as much as possible and prevent contamination of water supply.
- 4 Ves
- 5 Same as in other contagious diseases, reports, placards and notification.
- 6 A report by Health Officer.
- 7 a Blank reports are furnished to undertakers who are required to report at the end of each month all deaths, causes, etc.
  - b Blank reports are furnished physicians who are required to report at end of each month all births attended by them, with date, sex, color, parents names, nativity, etc.
- 8 Yes.
- 9 None.
- 10 One hundred dollars.
- 11 One.
- 12 About \$350.

### LORAIN-Population, 4,863-Dr. S. S. Cox, Health Officer.

- 1 a It does
  - b Yes.
  - c Yes.
  - d Adults are excluded from all public gatherings and children kept in the house.
  - e Yes
  - f Yes.
  - g No.
- 2 Yes.
- 4 Yes.

- 5 Same as other contagious diseases excepting placarding house.
- 6 Commencing January 1, 1894.
- 7 a Undertaker is required to furnish certificate from attending physician before a permit to bury is given.
  - b None.
- 8 Of death only.
- 9 About one mile of sewers constructed; garbage wagon run during summer months.
- 10 \$200 per year.
- 11 None.
- 12 \$744.93.

# LORAMIES-Population, 457-Dr. Thos. Walkup, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We remove the suspected cause; and disinfect excretions of patient.
- 4 Yes.
- 5 Quarantine family until danger is passed.
- 6 Yes.
- 7  $\alpha$  We require physician, or friends of deceased to report to Board of Health.
  - b We require physicians and midwives to report births to Board of Health.
- 8 Yes.
- 9 A dump for depositing the contents of privy vaults, a half mile from town covered with a lid and supplied with lock and key. Lime is used freely in this dump.
- 10 Health officer \$15.00 and clerk \$12.00.
- 11 None.
- 12 \$148.30.

### LOUISVILLE-Population, 1,323-Dr. J. H. Rogers, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - / Yes.
  - g Physician in charge.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None as yet.
- 6 No.
- 7 a Undertaker.
  - b No.
- 8 No.

- 9 None.
- 10 \$50,00.
- 11 Generally one.
- 12 Less than \$10.00.

# McARTHUR-Population, 888-Dr. G. M. Swepston, Health Officer.

- 1 a Yes.
  - b Yes.
  - c In the one case of scarlet fever that we had, the well children were kept away from the patient.
  - d We did not quarantine adults in this case; if we had an epidemic and the Board considered it necessary, we would quarantine adults.
  - e Yes.
  - f Yes, that is an adopted rule; but we have had no deaths.
  - og Yes.
- 2 Yes.
- 3 Keep everything in as good sanitary condition as possible, by the use of disinfectants.
- 4 Yes, when there is any to report.
- 5 We have had no measles; if we had we would be governed by rules and regulations adopted by the State Board of Health.
- 6 Yes.
- 7 a Reported by attending physician.
  - b I was not instructed to keep a record of births.
- 8 No.
- 9 There have been one hundred and forty rods of sewers constructed this year mostly of twelve-inch tile.
- 10 To be paid according to work done; it will not be over \$25.00 this year.
- 11 One.
- **12** \$83.60.

#### McCLURE-Population, 332-Dr. J. W. Sharpe, Health Officer.

- 1 a Yes.
  - b Always.
  - c Yes.
  - d All inmates quarantined.
  - e At once.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Examination of water supply from time to time. Pefect sewerage—examination of a'l premises every two weeks by sanitary policeman; in event of a case stools are disinfected and buried, and the possible cause found. Free use of disinfectants encouraged.
- 4 Ves.
- 5 Isolation of cases and strict quarantine of inmates.
- 6 Yes.
- 7 a Compel physician to furnish report to the clerk of Board.
  - b The same.

- 8 Yes.
- 9 Enlargement of sewers on our principal streets, filling up of cesspools, and thorough cleaning up of all our alleys, and by-streets.
- 10 No salary.
- 11 One.
- 12 About \$100; Board only established nine months ago.

McCONNELLSVILLE-Population, 1,771-Dr. J. D. Maris, Health Officer.

- 1 a Yes
  - b Yes.
  - c Yes, in separate rooms.
  - d Require changing clothing.
  - e Ves
  - f Have not had one in ten years.
  - g Yes.
- 2 Yes.
- 3 Disinfecting prisons, drains and sewers.
- 4 No.
- 5 None except isolation of patients.
- 6 All cases are reported to State Board.
- 7 a Undertaker's record.
  - b None.
- 8 No.
- 9 Nothing but to keep clean.
- 10 \$50,00.
- 11 None.
- 12 About \$100.

MADISON-Population, 738-Dr. A. H. Stockham, Health Officer.

- 1 a No.
  - b No.
  - c Only kept from school.
  - d None.
  - e Yes.
  - f None.
  - g No.
- 9 No.
- 3 General sanitation.
- 4 No.
- 5 None.
- 6 None.
- 7 " None, except us doctors are called upon for the year's report.
  - / None except as above.
- 8 Only by physician.
- 9 There has been no special work necessary.
- 10 Nothing.
- 11 None.
- 12 Small printing bill.

## MALTA-Population, 865-Q. Wiseman, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 Ordinary cleanliness.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 None.
- 9 None.
- 10 \$25,00.
- 11 None.
- 12 About \$50.00.

## MANCHESTER—Population, 1,965—Dr. R. A. Stephenson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Have ordered that it be done, and in most cases it was done.
  - d Yes.
  - e. Our superintendent was instructed and has been faithful in attending to that duty.
  - f When cause of death was known to be from contagious disease.
  - g Yes.
- 2 No.
- 3 Proper disinfection. Have not placarded houses, but instructed family to warn visitors.
- 4 Yes.
- 5 Quarantine and disinfection, and placarding house.
- 6 Yes.
- 7 a Physicians are required to report all deaths to secretary of Board of Health.
  - b Not reported. The report of births is taken by the township assessor, in April and May of each year.
- 8 Of deaths only.
- 9 We have three sewers leading to Ohio river, and during the past year over 10,-000 feet of tile has been laid to conduct the waste water to the various sewers
- 10 One hundred and forty dollars per year.
- 11 None.
- 12 Two hundred dollars.

### MANSFIELD—Population, 13,473—Dr. R. Harvey Reed, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.

- d Yes.
- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 Quarantine, disinfection of stools, boiling drinking water.
- 4 Yes.
- 5 Ordinary quarantine, same as other contagious diseases.
- 6 Yes.
- 7 a Compel undertakers to secure permits to bury under a heavy fine for not doing so, also physician's certificate of death.
  - b Yes. Compel physicians to report under a heavy fine or imprisonment for neglect.
- 8 Yes.
- 9 Preliminary arrangements for a crematory, and agitating the care of our sewage by settling basins or sewage tarms.
- 10 \$300.00.
- 11 One.
- 12 \$1,745,14.

## MARBLEHEAD-Population, 312-Dr. A. B. Jordon, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e No.
  - f Yes.
- g Yes. 2 Yes.
- 3 Have not had a case in corporation since Board was organized.
- 4 Yes.
- 5 Quarantine patient, and fumigate house and clothing after recovery.
- 6 No.
- 7 a None, except in case of contagious disease when person having patient in charge is supposed to report to Health Officer.
  - b None.
- 8 No.
- 9 None.
- 10 No salary.
- 11 One in summer.
- 12 Eleven dollars.

# MARICE CITY-Population, \$95-S. H. Bretz, Health Officer.

- 1 a No.
  - b Yes.
  - c We would if any cases should occur.
  - e Had no occasion, but would if necessary.
  - f Had no deaths of either disease.
  - g Yes, if necessary.
- 2 Health Officer has required it, but none been reported.
  - 12 S. B. H.

- 3 Removing garbage, cleaning and disinfecting privy vaults, and removing pools of stagnant water. This has been generally enforced.
- 4 We do, but none reported.
- 5 If we had cases we undoubtedly would enforce measures of cleanliness, and any other measures to prevent the disease.
- 6 Yes.
- 7 a I have asked our physicians to report all deaths to me, but they have failed to report any.
  - b No births reported.
- 8 Only deaths of contagious diseases.
- 9 Removal of garbage in streets and alleys, cleaning privy vauits, stagnant water, removal of and prohibiting slaughtering of cattle in the corporation.
- 10 Forty dollars per year.
- 11 Employed one for three months.
- 12 Forty-seven dollars.

# MARION—Population, 8,327—M. R. Swisher, Health Officer.

- 1 *a* Yes. *b* Yes.
  - c Yes.
  - d No.e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 Yes.7 a From undertakers.
  - b None.
- 8 No.
- 9 None.
- 10 \$15.00 per month.
- 11 One.
- 12 About \$4.00.

# MARSHALLVILLE—Population, 366—H. B. Willford, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 9 No
- 3 There has not been a case of typhoid fever in this village for 22 years.
- 4 Yes.
- 5 Strict quarantine of premises.

- 6 Yes.
- 7 a None.
  - b None.
- S No.
- 9 None.
- 10 Nothing.
- 11 One.
- 12 \$5.00.

## MARTINSVILLE-Population, 336-Dr. J. K. Ruble, Health Officer.

- 1 a Have had none.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 We have had no typhoid fever but we require reports.
- 3 By keeping town clean, attention to drinking water, etc.
- 4 Yes.
- 5 There has been no measles in this part of country.
- 6 We have had none.
- 7 b The Board requires each physician to report births.
- 8 Yes.
- 9 All outhouses must be kept clean and were removed 50 feet from wells; every, thing that might produce disease was removed.
- 10 \$8.00.
- 11 One.
- 12 I do not know how much, but the expenses have not been much as each citizen attended to his own premises and we did not have to force them.

# MARYSVILLE-Population, 2,810-Dr. A. B. Swisher, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes—Quarantine all members of family until all danger from contagion is past.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Strict hygiene—health officer visits premises where disease prevails and causes removal of cause of the disease.
- 4 Yes.
- 5 Placarding house.
- 6 No.
- 7 a Postals are furnished physicians upon which they are expected to report all cases of contagious disease and deaths therefrom.
  - b No.
- 8 No.
- 9 Money has been expended to plot corporation with view to putting in a firstclass system of sewerage.
- 10 \$100.00.
- 11 One regular-In case of epidemics specials or extras are appointed for the time
- 12 \$400.00.

## MASON-Population, 565-Dr. C. T. Hall, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 As perfect sanitary care of the village as possible.
- 4 Yes.
- 5 As perfect sanitary care of the village as possible.
- 6 Yes.
- 7 a By rule of board.
  - b By rule of board.
- 8 Yes.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 About \$75.00.

# MASSILLON—Population, 10,092—Dr. T. Clarke Miller, Health Officer.

- 1 a Yes.
  - b Yes.
  - c We do not compel this; a good deal is involved,
    - d Instructions to avoid contact with other people.
    - e Yes.
    - f Yes.
    - g Regular physicians to attend to this.
- 2 Yes
- 3 Keeping premises clean, also alleys; instruct as to disinfection of excreta.
- 4 Yes.
- 5 Placard the house.
- 6 Yes.
- 7 a Undertakers are not allowed to remove a body without a permit, which is not given until they present a certificate covering the points we want. Physicians report once a month, we get all of them.
  - b Physicians and midwives report once a month; we get probably three-fourths of them; a good many are born without physician or midwite.
- 8 Yes.
- 9 The water supply is all from deep wells of excellent water, some paving and a little extension of sewers. Formerly, the city water was from surface gathering area. The use of town wells and cisterns is decreasing.
- 10 Three hundred dollars per year.
- 11 Employ one man one-half to two-thirds of the year; we call him sanitary inspector.
- 12. I think about six hundred dollars.

## MECHANICSBURG-Population, 1,459-Dr. O. A. Niucehelser, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Cleanliness about premises; disinfection of stools, and boil water before use.
- 4 No.
- 5 None.
- 6 Yes.
- 7 a Monthly reports from physiciaus.
  - b Monthly reports from physicians.
- 8 Yes.
- 9 None.
- 10 \$40.00 per year.
- 11 One.
- 12 \$65.00.

# MEDINA-Population, 2,073-A. A. Foskett, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Not strictly, but to a degree.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 By placing card on house and burying excreta, and using other precautions.
- 4 Yes.
- 5 Placing card and quarantining against those who are liable to have them, but not strict quarantine.
- 6 Yes.
- 7 a All reports are expected to be handed to Health Officer.
  - b No, have not in the past kept a record but intend to in the future.
- 8 Not strictly.
- 9 Placed a covered drain of about three hundred feet of twelve-inch tiling. Take care of filth at opening with lime.
- 10 Commission on his work.
- 11 None.
- 12 \$55.00.

#### MELROSE-Population, 430-William Roach, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f None.

- g Yes.
- 2 Yes.
- 3 Cleanliness of alleys, lots, privies.
- 4 Ves
- 5 None.
- 6 No.
- 7 a None, except through the physician.
  - b None, except through the physician.
- 8 No.
- 9 Nothing but keeping everything clean.
- 10 About \$5.00.
- 11 None.
- 12 About \$12.00 for vaccination.

## MENDON-Population, 400-Dr. J. M. Miller, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Have had none.
  - g Yes.
- 2 Yes.
- 3 Not any by Board.
- 4 Yes.
- 5 None except quarantine.
- 6 One only as I keep myself.
- 7 a None.
  - b None by Board.
- 8 No.
- 9 Cleaning of alleys and outhouses in general.
- 10 No specified salary.
- 11 None.
- 12 Six dollars.

## MENTOR-Population, 502-Dr. J. W. Lowe, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes, when more than one case.
  - e Yes.
  - f Yes, when we can, and in some cases have it done at night.
  - g Yes, when death occurs in house.
- 2 Yes.
- 3 We have so little typhoid fever that it has not become necessary to enforce any measures.
- 4 No.
- 5 We have had no trouble with measles, therefore enforce no measures for prevention.

- 6 Yes.
- 7 a We obtain them from our local physicians who keep a record.
  - b Our physicians keep a record of births and we obtain them in that way.
- 8 Yes.
- 9 We have endeavored to educate all of the necessity to cleanliness in and around their premises.
- 10 \$10.00.
- II One when needed.
- 12 \$16.00.

## MIAMISBURG-Population, 2,952-Dr. H. Schoenfeild, Health Officer.

- I a Yes.
  - b Yes.
  - c Yes.
  - d Quarantine and disinfect thoroughly in all cases. Rules strictly enforced.
  - e Always.
  - f Yes, in all cases.
  - g Generally by attending physician.
- 2 Yes.
- 3 Put all things in good sanitary condition, disinfection, boiling of all drinking water and excluding all except those necessary in attendance.
- 4 Yes.
- 5 Quarantine the house.
- 6 Not complete.
- 7 a Undertaker has to present to the clerk of board of health a certificate from attending physician and procure a certificate for burial before they can remove the remains.
  - b Physicians are required to make a monthly report of all births for each month though we have trouble at times in getting them.
- 8 Yes.
- 9 None of special character.
- 10 Salary, \$75.00.
- 11 Two.
- 12 \$172.75.

## MIDDLEI ORT-Population, 3,211-Dr. J. H. Pake, Health Officer.

- 1 a No.
  - b Yes.
  - c Yes.
  - d Has not been strictly enforced.
  - e Yes, the physicians do this.
  - f Yes, this has been strictly enforced.
  - g No, only in a few instances.
- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.

- 9 There has been more work done on drainage both underground and surface this year than any year in the history of the village.
- 10 Fifty dollars per annum.
- 11 One.
- 12 One hundred dollars.

# MIDDLETOWN-Population, 9,564-Dr. G. D. Lummis, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No, but inquire into them.
- 3 The physician is notified to give instructions as to care of patient.
- 4 No
- 5 Kept out of the schools.
- 6 Yes.
- 7 a Reports must be sent in to health officer, signed by physician and undertaker before permit to bury is given.
  - b Sanitary policeman visits each physician, who is supplied with blanks, the first day of each month.
- 8 Yes.
- 9 None.
- 10 \$200 per annum.
- 11 One.
- 12 \$779.01, including health officer's salary.

#### MILAN-Population, 627-Richard Rawle, Health Officer.

- 1 a Is strictly enforced.
  - b Is strictly enforced.
  - c A reasonable time after exposure.
  - e Not strictly enforced.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 When the case develops we remove the cause, if possible.
- 4 No.
- 5 Not any.
- 6 No; but we report all to the state.
- 7 a Being the undertaker there is no trouble in getting reports.
  - b The births are taken by the assessor.
- 8 By the assessor.
- 10 Twenty-five cents per hour for actual time required.
- 11 Only health officer.
- 12 About \$12.

# MILFORD-Population, 995-Dr. F. C. Curry, Health Officer.

- 1 a Yes.
  - b No.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- Yes.To obtain pure water and complete disinfection of typhoid fever patients' stools.
- 1 Vec
- 5 Quarantine and disinfection of clothing and houses in which were sick ones.
- 6 Yes.
- 7 a Through attending physician.
  - b Same means as in deaths.
  - Yes.
- 9 Removal of garbage, regulating building of privy vaults, cleanliness of streets and keeping, as near as possible, pure water supply.
- 10 \$50 per year.
- 11 One.
- 12 About \$250.

# MILFORD CENTER-Population, 718-J. H. Weiser, Health Officer.

- 1 a Yes.
  - b Yes.
  - c. Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
  - 2 Always been reported.
- 3 Cleanliness; by enforcing strict sanitary laws.
- 4 Yes.
- 5 By placarding house.
- 6 No.
- 7 a Nothing has been done on that line.
  - b We have made no arrangement for the report of births.
- 8 No.
- 9 Strict enforcement of sanitary laws
- 10 \$25 a year.
- 11 None.

# MILLERS-Population, 263-M. M. Cown, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No definite rule. In one case were removed.
  - d Applied to all in the house.
  - e Yes.
  - f Yes.
  - g Yes.

- 2 Yes.
- 3 Have had none and no special order made.
- 4 It is required.
- 5 Have had none and no special order made.
- 6 Yes.
- 7 a Physicians ordered to report to clerk.
  - b Physicians ordered to report to clerk.
- 8 By the clerk.
- 9 In the early summer I had a general and pretty thorough cleaning of my district with disinfection by lime.
- 10 \$1.50 per day for time employed.
- 11 None.
- 12 Fifty dollars.

MILLERSBURG-Population, 1,923-Dr. J. E Whitmar, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Not always.
  - f Yes.
  - g Yes.
  - 2 Yes
- 3 Disinfection of fecal and other discharges and look after the purity of drinking water.
- 4 Have had no measles yet.
- 5 None.
- 6 No
- 7 a Board requires certificate for burial in the cemetery here and also for transportation; none other.
  - b None.
- 8 No.
- 9 Nothing special.
- 10 \$75.00 per annum.
- 11 None.
- 12 Only Health Officer's salary.

MINERAL RIDGE—Population, 851—John C. Jones, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Recommended, but not strictly enforced.
  - g The board orders disinfection but does not supervise it.
- 2 Yes.
- 3 The board orders a general cleaning up and burning of all rubbish, and recommends the use of disinfectants in privies.
- 4 Yes.

- 5 The same as in cases of diphtheria and scarlet fever with the exception of quarantine.
- 6 No.
- 7 a Reports are generally received when application is made for burial permit.
  - b The board makes it the duty of the attending physician to report all births; if there should not be a physician in attendance then the parents are required to report the birth and sex to the board.
- 8 Yes.
- 9 There have been no extensive sanitary improvements as the town is in a fair sanitary condition. The board ordered the filling up of several cesspools and had gutters opened.
- 10 Has no salary.
- 11 One.
- 12 About \$30.00.

## MINERVA—Population, 1,139—Thos. J. Roach, Heath Officer.

- 1 a Yes—two members of the board are physicians.
  - b Yes. No diphtheria or scarlet fever reported during the year.
  - c Would not.
  - d Would use all precaution.
  - e Yes.
  - f None.
  - g None.
- 2 Yes.
- 3 Placarding the house and thorough examination of the premises, with orders to clean up the same.
- 4 Yes.
- 5 The same as for typhoid fever.
- 6 Yes.
- 7 a No record kept.
  - b No record kept.
- 8 No.
- 9 None made.
- 10 \$20.00 per year.
- 11 None.
- 12 Amount not exceeding \$40.00 including officers' salaries.

#### MINGO JUNCTION-Population, 2,408-F. S. Buckingham, Health Officer.

- 2 Yes.
- 3 None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b No report kept.
- 8 No.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 Nothing.

MONTPELIER-Population, 1,293-Dr. H. W. Wertz, Health Officer.

```
1 a Yes.
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- b Yes.
- c Yes.
- d Yes.
- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 None.
- 4 No.
- 5 None.
- 6 We have had none.
- 7 a The health officer.
  - b None.
- 8 No.
- 9 None.
- 10 No salary.
- 11 One.
- 12 \$11.50.

MT. GILEAD—Population, 1,329—I. O. Busby, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes. g Yes.
- 2 Yes.
- 3 Enforced by proper sanitary rules.
- 4 Yes.
- 6 Yes.
- 7 a Through physicians.
  - b Through physicians:
- 8 Yes.
- 10 \$65.00.
- 11 None.
- 12 \$150.00.

MT. STERLING-Population, 752-Dr. C. T. Gallagher, Health Officer.

- 1 a It does.
  - b Yes.
  - c Yes, or isolation.
  - d Quarantine so far as attending public meetings.
  - e Yes.
  - f Yes.
  - g Yes, or attending physician.

- 2 Yes.
- 3 Cleanliness and proper drainage so far as practicable, inspection of wells, etc.
- 4 Yes.
- 5 None other than quarantine and disinfection when case exists.
- 6 Not accurate.
- 7 a Attending physician is required to furnish Board with death certificate and undertaker must have a burial permit from Board of Health.
  - b Physicians are expected to report births, but it is not always done.
- 8 All deaths and part of births.
- 9 Dumping ground outside of corporation purchased. Cesspools in alleys removed. Tile drain taken up and replaced after removing obstructions.
- 10 \$25.00 per year.
- 11 One.
- 12 \$50.00

MT. VERNON-Population, 6,027-Dr. Geo. B. Bunn, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Under supervision of Health Officer. ,
- 2 Yes.
- 3 Ascertain the source and abate the same; disinfect the excretions and clothing of patient; also place discharges in trenches.
- 4 No.
- 5 None.
- 6 Yes.
- 7 a Undertakers are required to deposit with Health Officer a death certificate before a burial permit is granted.
  - b Physicians are required to make monthly report.
- 8 Yes.
- 9 Prior to 1893 garbage and night soil was deposited any and all places; this year I prevailed on our board to secure a dumping ground and we are now using the trench system.
- 10 \$160.00.
- 11 One.
- 12 About \$800,00.

MT. WASHINGTON-Population, 520-Dr. J. W. Dodds, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Not as yet.
- 2 Yes
- 3 Strict attention to sanitary conditions.
- 4 Yes.

- 5 By stopping all other children of family from school.
- 6 Yes.
- 7 a Each physician is provided with blanks and is required to report all deaths to Health Officer.
  - b Same as above.
- 8 Yes.
- 9 None as yet.
- 10 No salary.
- 11 One.
- 12 About \$50.00.

## MURRAY CITY-Population, 2,518-Dr. T. J. Dillinger, Health Officer.

- 1 a Yes.
  - b Yes.
  - c As far as circumstances will allow.
  - d Yes.
  - e Yes.
  - / Yes.
  - g Yes.
- 2 Yes.
- 3 Water is boiled before using if suspected of containing typhoid germs; room and articles used by patient disinfected and stools and other excrements buried after being scalded and disinfected.
- 4 Yes.
- 5 Quarantine the sick and those exposed; suspend schools and churches until the sick are well.
- 6 Yes.
- 7 a Each physician reports the deaths that occur in his practice; there was no record kept last year only as deaths were reported to secretary of State Board of Health.
  - b Each physician keeps a list of all the obstetrical cases he attends and gives them to the Health Officer at end of year.
- 8 There will be this year.
- 9 All privies of long standing had new vaults dug and old ones filled; stagnant pools drained; hogpens disinfected and rubbish cleaned up.
- 10 \$1.50 per month.
- 11 None.
- 12 About \$25.00.

# NAPOLEON-Population, 2,764—L. V. Betson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Try to.
  - d Try to.
  - e Yes.°
  - f No.
  - g No.
- 2 Yes.
- 3 None.

- 4 Yes.
- 5 Card houses; prohibit well children in house going to school.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 General cleaning up of privies and alleys.
- 10 \$20.00 per month in summer, nothing in winter.
- 11 None.
- 12 \$50.00, salary Health Officer.

## NASHVILLE-Population, 221-J. A. Underwood, Health Officer.

- 1 a There have been no cases of diphtheria or scarlet fever since the organization of board.
- 2 No report made by the attending physician.
- 4 There is one case of measles in our village at present.
- 5 Keep the children exposed out of school and quarantine them.
- 6 We have had none except as mentioned.
- 7 a None. There have been no blanks furnished to the Health Officer for that purpose that I have seen.
  - b There have been two, but there are no blanks for reporting them.
- 8 No.
- 9 None.
- 10 Nothing.
- II One.
- 12 Nothing.

#### NAVARRE-Population, 1,010-John Bailiss, Health Officer.

- 1 a Yes. We have had no case.
  - b Yes.
  - d No occasion yet.
  - e None.
  - f Yes.
  - g Yes.
- 2 Ves, through Health Officer and physician if any.
- 3 Quarantine rules strictly enforced if case is heard of.
- 5 No cases yet.
- 6 Yes, if any.
- 7 a Through undertaker and attending physician.
  - *b*♠ Record kept.
- 8 Yes
- 9 None special. Privy vaults are being constructed according to the rules of the board.
- 1 + 25.00.
- 11 ... e.
- 12 About \$50.00.

# NEW CARLISLE-Population, 1,438-Dr. Ben Davis, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.

f Yes.
g Yes.
Yes.
None.

e Yes. f Yes. g Health Officer. No. 3 None. 4 Yes. 5 Quarantine. 6 No 7 a Undertaker's report. b Physician in charge reports. Yes. 9 None. 10 \$10.00. 11 None. 12 About \$60. NEW HOLLAND-Population, 683-J. G. Dunlap, Health Officer. 1 a Yes. b Yes. c Yes. d Yes. e In some cases. f Yes. g Yes. 2 Have had no reports. 3 Nothing done. 4 We require reports. 5 Have had no cases. 6 No. 7 a Have had none. b Require the attending physicians to report them, but have not enforced the rule. No. New vaults dug, weeds cut and a general cleaning up. All garbage and offal generally cleaned up within corporation limits. 10 Paid according to work done. 11 None. 12 \$20.00. NEW LEXINGTON-Population, 1,470-Jas. B. Porter, Health Officer. 1 a Yes. b Yes. c Yes. d Yes. e Yes.

- 4 Have had no measles during the year.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 \$42.00 per year.
- 11 None.
- 12 \$52.00.

NEW LISBON-Population, 2,278-R. G. Eells, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Keep the parents in, disinfect the house, do all the doctor thinks necessary to do.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We card the house and allow the balance of the family to go where they; please
- 5 Nothing.
- 6 Yes.
- 7 a Get them from undertakers.
- 8 Of deaths only.
- 9 4,500 feet of sewer put in and more under contract.
- 10 \$180.
- 11 None. I do all.
- 12 \$202.

NEW LONDON-Population, 1,096-W. B. Newkirk, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes. We allow no person to leave house without permit.
  - e Yes.
  - f No.
  - g Yes.
- 2 Yes.
- 3 We cause the excreta of typhoid patients to be disinfected, also carefully examine drinking water.
- 4 Yes.
- 5 Quarantine, but not as rigid as for diphtheria or scarlet fever.
- 6 Yes.
- 7 a Compel all undertakers to fill out regular death certificate and all physicians to fill out same before burial permit is granted.
  - b Blanks are given physicians to report births, but they have not complied and I have no record of them.
- 8 A record of deaths is kept.
  - 13 S. B. H.

- 9 Several tile drains taken up and enlarged, town cleaned up, streets cleaned of garbage and horse manure every week.
- 10 \$60 per year.
- 11 None.
- 12 Not more than \$150.

NEW MADISON-Population, 478-J. F. S. Hagerman, Health Officer.

- 1 a Yes.
  - e Yes.
- 2 It is required.
- 3 Cleanliness and pure water.
- 4 It is required.
- 6 Will be this year.
- 7 a Require report of attending physician.
  - b Report of physician or midwife in attendance.
- 10 \$10 for the year 1893.
- 12 \$42.50.

NEW PARIS-Population, 848-Dr. W. U. T. Williams, Health Officer.

- 1 a Yes.
  - b Yes
  - c Yes.
  - d Adults are quarantined.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 We have had no typhoid fever here for years.
- 4 Yes.
- 5 The houses are placarded and children quarantined.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 The town last year was carefully inspected and all garbage removed and everything done to put the town in a sanitary condition.
- 10 \$10.00.
- 11 None.
- 12 \$10.00.

NEW PHILADELPHIA—Population, 4,456—Dr. J. T. Maclean, Health Officer.

- 1 a Yes.
  - b Yes.
  - c By very few physicians—two only; otherwise no regulations are enforced.
  - d Not enforced.
  - e Yes.
  - f Yes.
  - g By order of B ard.

- 2 Yes.
- 3 Disinfection of excreta and immediate burial; boiling drinking water.
- 4 Yes
- 5 Same as for scarlet fever and diphtheria.
- 6 Yes.
- 7 a From report furnished by undertaker; we grant a burial permit with certificate from attending physician as to cause of death; accurate record of deaths is kept.
  - b Blanks were furnished physicians, but they will not report and the regulation has not been enforced.
- 8 Of deaths only.
- 9 Complete storm sewerage for entire village and separate sanitary sewerage for three principal streets.
- 10 None.
- 11 Two.
- 12 About \$100.00.

NEW RICHMOND-Population, 2,379-Dr. T. J. Mullen, Health Officer.

- 1 a In all cases requiring reports within twelve hours.
  - h Yes.
  - c Yes.
  - d All kept within, and sanitary police attends to wants, etc.
  - o Ves
  - f Yes.
  - g Yes; fumigation by sanitary police.
- 2 Yes.
- 3 The same as other contagious diseases—the house is posted and quarantine regulations enforced.
- 4 No.
- 5 None; they are generally very mild and require no attention.
- 6 Yes.
- 7 a None have been adopted by this Board.
  - b None.
- 8 None.
- 9 A general cleaning up of the streets and alleys, and removal of all garbage, improvement of privy-vaults.
- 10 \$50.00.
- 11 One.
- 12 \$79.62 for sanitary purposes.

NEW STRAITSVILLE—Population, 2,782—Dr. C. B. Powell, Health Officer.

- 1 a Ves.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None; we have had but two cases within two years in our town.
- 4 Yes.

- 5 None.
- 6 Yes.
- 7 a By our undertaker.
  - b By physicians and midwives.
- 8 Yes.
- 9 Our public improvements have been by keeping our town clean of all filth.
- 10 \$6.00 per month.
- 11 None.
- 12 Ten dollars.

## NEW VIENNA-Population, 871-Dr. C. M. Rice, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes; diphtheria is not common here. I have not seen a typical case in thirteen years.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection of excreta.
- 4 Yes.
- 5 Isolation and quarantine.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 Nothing.
- 11 One.

#### NILES-Population, 4,289-Dr. F. Casper, Health Officer.

- 1 *a* Yes. *b* Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 In serious cases only.
- 3 Secure the best sanitary condition possible.
- 4 No.
- 5 None.
- 6 No.
- 7 a None up to present time. Intend to provide for reports in the future.
  - b None up to present time. Intend to provide for reports in the future.
- 8 No.
- 9 Cleaned up all yards, alleys, and out-houses, making each property owner, as far as practicable, put in brick or stone water-tight vaults.
- 10 No fixed salary.

- 11 One.
- 12 Sanitary police salary \$25 per month.

## NORTH AMHERST Population, 1,648-N. H. Cornwell, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 The stools are properly attended to.
- 4 Yes
- 5 All cases are quarantined as far as possible.
- 6 No.
- 7 a Undertakers are requested to report all deaths.
  - b Some physicians will not report births.
- 8 Yes.
- 10 \$50.00 per year.
- 11 None.
- 12 About \$65.00.

## NORTH BALTIMORE - Population, 3,500-J. W. Metzker, Sanitary Police.

- 1 a Yes.
  - b Yes
  - c We quarantine the house.
  - d We quarantine.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 We receive report.
- 3 We have not had any.
- 5 Notify superintendent of school and quarantine.
- 6 Yes.
- 7 a We issue permits.
  - b No record.
- 9 We have drained pools, cleaned alleys and disinfected outbuildings, using lime.
- 10 \$300.00.
- 11 One.
- 12 \$373.35.

#### NORTH LEWISBURG-Population, 866-A. Spain, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d An attempt is always made to quarantine adults.
  - c Yes
  - f Yes.
  - g Yes.

- 2 Yes.
- 3 Proclamation issued requiring water to be boiled. Nurses instructed to disi n fect stools.
- 4 Yes.
- 5 Quarantine.
- 6 No.
- 7 a Health Officer requires physicians and undertakers to report same.
  - b No record kept.
- 8 Deaths only.
- 9 A pond of stagnant water drained by tile. A few public privy vaults abolished-
- 10 25 cents per hour for all time employed.
- 11 None.
- 12 \$48.50.

# NORWALK-Population, 7,195-Dr. Edgar Martin, Health Officer.

- 1 *α* 'Yes.
  - b Yes.
  - c Yes.
    - d Yes.
  - e No.
  - f Yes.
  - g No.
- 2 No.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Undertaker reports name, residence, disease and attending physician.
  - b None.
- 8 Only deaths.
- 10 \$240.00.
- 11 None.
- 12 About \$300.00.

# OAK HARBOR—Population, 1,681--Dr. F. S. Heller, Health Officer.

- 1  $\alpha$  ·Yes.
  - b Yes.
  - c We do in diphtheria cases.
    - d We do in diphtheria.
    - e Yes.
  - f Yes.
  - g No.
- 2 Yes.
- 3 Sanitary measures.
- 4 No.
- 6 No.
- 7 a Request report from physicians.
  - b Request report from the attending physician.
- 8 No.
- 10 \$50.00 per year.
- 11 One.

#### OAK HILL-Population, 657-Wm. Morgan, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 As recommended by State Board of Health.
- 4 Yes, of all contagious diseases.
- 6 No; but intend to.
- 7 a Issue permit to undertaker on physician's certificate of cause of death.
- 8 Not yet.
- 9 We did not find it necessary for much sanitary work during 1893, except a few cellars and privy vaults which were cleaned and put in good order.
- 11 None.
- 12 None.

# OAKWOOD-Population, 378-J. H. Stover, Health Officer.

- 1 a Physicians report nothing.
  - e Yes; if reported.
- 3 None in particular.
- 4 Yes; but attending physicians fail to report.
- 6 I have kept a record of all that came to my observation.
- 7 a I procured necessary blanks and gave them to the doctors with a request to make reports of deaths, but they failed to do so.
  - b I required the same of births, with same result.
- 9 I caused twenty-three privy vaults emptied and disinfected, and, in some cases, new vaults made. Also caused the railroad company to fill a sink hole on right of way.
- 11 None but the Health Officer.
- 12 \$3.00 for blanks.

## OHIO CITY-Population, 606-Dr. E. E. Smith, Health Officer.

- 1 a Yes.
  - b Yes.
  - c We have had no cases since organization.
  - d Same as above.
  - e Same.
  - f No.
  - g No.
- 2 Yes.
- 3 Quarantine the house by using placard.
- 5 Children are kept at home.
- No.
- a None.
  - b None.
- 8 No.

- Seventy-three vacant lots mowed, thirty-nine privy vaults cleaned, and three carcasses removed out of the corporate limits.
- Twelve cents for each notice served. 10
- None.
- 12 \$183.74.

## OLMSTEAD FALLS-Population, 342-C. H. Barnum, Health Officer.

- 1 a Yes.
  - Yes.
  - c Yes.
  - d Yes.
  - Yes.
  - f Yes.
- g Yes.
- 2 Yes.
- 3 Rules recommended by State Board of Health adopted.
- 4 Yes.
- 5 Rules recommended by State Board of Health adopted.
- 6 Yes.
- a Physicians furnished with blanks and required to report.
- b Physicians furnished with blanks and required to report.
- 8 Yes.
- 9 None necessary.
- 10 \$25 per year.
- 11 None.
- 12 \$10.96.

#### ORRVILLE-Population, 1,766-Dr. H. Blankenhorn, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes. g Yes.
- 2 Yes.
- 3 No active measures are used.
- 4 Yes.
- 5 None. Have had no epidemic for years.
- 6 No.
- 7 a Principally through undertaker. Permit to bury or remove dead given only when complete report is made by him.
  - b Physicians report at end of each month on card for that purpose.
- 8 For one year.
- 9 None of any importance.
- 10 \$75.
- 11 One.
- 12 Less than \$60.

## OSGOOD—Population, 242—Dr. J. W. Sprague, Health Officer.

- I a Yes.
- 2 We require it but there is none.
- 3 We do not allow any impure water to be used and keep all filthy water removed.
- 4 We require but there is none.
- 5 We do not allow anyone to go where it is or any one to come here.
- 7 a I see to getting report of death.
- 9 Filth is all hauled out. Privies are kept cleaned out and we intend to keep everything in good order. Every effort will be made to keep it healthy.
- 10 Nothing.
- 11 One:
- 12 About \$10.

## OSNABURG-Population, 644-Dr. Joshua Whiteleather, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Cleaning of privy vaults, removal of night soil and offensive substances.
- 4 Yes
- 5 We use all necessary measures to restrain him of his liberty until the danger ceases.
- 6 Yes.
- 7 a No corpse shall be removed for burial or cremation without a permit from the Board.
- 8 Yes.
- 9 To remove all nuisances, clean privy vaults and cesspools at least once a year and oftener if found necessary.
- 10 \$50.00.
- 11 None.
- 12 None.

## PAINESVILLE-Population, 4,755-Dr. D. J. Merriman, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes
- 2 Physicians have been notified to report.
- 3 Strict cleanliness, looking after water supply and sewerage.
- 4 Yes
- 5 The same as in diphtheria.
- 6 Yes.

- 7 a No burials are allowed in cemeteries without the proper permit.
  - b Blanks are furnished all physicians and personal inquiry made at end of month by the health officer.
- 8 Yes.
- 9 Thorough inspection of premises and cleaning up is all that has been done.

  Two or three miles of sewer put in during year.
- 10 §20 per month.
- 11 Two during summer.
- 12 Not able to tell as all bills are paid by council out of general fund.

## OBERLIN-Population, 4,376-E. L. Burge, Health Officer.

- $1 \quad a \quad \text{Yes.}$ 
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 General sanitation.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 a Physicians' reports.
  - b Physicians' reports.
- 8 Yes.
- 9 Built six miles of sewers.
- 12 \$10.00.

## PATASKALA-Population, 658-Dr. James Lisle, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Where it is possible.
  - d None.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 4 Yes.
- 5 Families are quarantined.
- 6 No.
- 7 a There has been no action by the board.
  - b No reports made.
- 8 No.
- 9 None.
- 10 Fuel.
- 11 None.
- 12. Nothing.

## PATTERSON-Population, 247-John C. Gardner, Health Officer.

- 1 a Yes.
  - b Yes.
  - f Had no deaths.
- 2 Yes.
- 4 No cases.
- 6 None, only as reported to State Board of Health.
- 7 a Attending physicians have made no report.
  - b Same as in reports of deaths.
- 8 No.
- 9 None. Board was only organized June 22, 1893.
- 10 \$12.00 per year.
- 11 None.
- 12 \$31.78.

## PENINSULA—Population, 562—Dr. W. N. Boerstler, Health Officer.

- $1 \alpha \text{ Yes.}$ 
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g No.
- 2 No.
- 3 Health Officer notified families to disinfect stools.
- 4 No
- 5 None as yet. Have had no cases since establishing the board.
- 6 Not as yet, but have ordered book for such purpose.
- 7 a By allowing no burials without permit.
  - b None.
- 8 Yes.
- 10 \$25,00.
- 11 None.
- 12 \$100 including \$50 for treatment of poor.

# PERRYSBURG-Population, 1,747-Dr. J. H. Rheinfrank, Health Officer.

- 1 a Yes.
  - b Yes.
  - d No.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 If we have a case and can trace it to any cause, we remove the cause.
- 4 Have had none.
- 5 None.
- 6 No.
- 7 a Can get facts at any time from secretary of cemetery trustees.
  - b None.
- 8 No.

- 9 Nothing of any importance.
- ' 11 One.
  - 12 About \$65.00.

PERRYSVILLE-Population, 522-Dr. S. N. Alban, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Thorough disinfection of excreta. Cleanliness, fumigation and disinfection of premises and contents after death or recovery.
- 4 Have not—have been no cases.
- 5 None.
- 6 Yes.
- 7 a Have furnished all the physicians with the requisite blanks but they have not complied with the requirements.
  - b Same as above.
- 8 No.
- 9 Have been none except the improved cleanliness of the town.
- 10 \$20.00.
- 11 One.
- 12 \$46.00.

PHILO-Population, 500-Dr. J. F. Addison, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a One health officer reports to the secretary of board, who keeps record in book kept for the same.
  - b Physicians are required to report the same to secretary of board.
- 8 Yes.
- 9 All privy vaults were required to be cleaned or dug to the depth of at least 4 feet below the surface. All public wells were ordered cleaned. We have about 20 public wells, our only water supply.
- 10 No salary. .
- 11 No other than health officer.
- 12 About \$20.00.

## PIONEER-Population, 596-W. H. Durbin, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Have had none severe enough.
- 2 Yes.
- 3 Isolation of all but attendants.
- 4 We do.
- 5 Have not been troubled with measles.
- 6 Ves
- 7 a Have the attending physician report the same to health office as well as the undertaker.
  - b Physicians report to health officer.
- 8 Yes.
- 9 Cleaning of all rubbish and cleaning of privy vaults.
- 10 Nothing.
- 11 Four—as a visiting committee.
- 12 Nothing.

# PLEASANT RIDGE—Population, 242—Dr. J. J. Marvin, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - / Yes.
  - g Yes.
- 2 Yes.
- 3 No cases reported, therefore no measures required.
- 4 Yes.
- 5 No cases reported.
- 6 Yes.
- 7 a No burial permits issued unless accompanied by physicians' certificates.
  - b No especial means but I think all are reported.
- 8 Yes.
- 9 Graveling an alley and opening gutters; abating nuisances reported; cleaning privy vaults.
- 10 \$25.00 a year.
- 11 One a portion of the time when necessary.
- 12 \$94.50.

## POLAND-Population, 391 - Dr. C. R. Justice, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - c Yes.

- f Yes. g Yes.
- 2 Yes.
- 3 Good drainage—we look carefully after water supply and have had but one case in our borough in the year.
- 4 Yes.
- 5 We have had no epidemic since our organization.
- 6 Yes.
- 7 a We require burial permits and a certificate from the attending physician.
- 8 No.
- 9 Our town has been very healthy during past year—we did some draining last summer, moved a number of water closets and pig pens.
- 10 \$25.00.
- 11 One
- 12 About \$85.00.

POMEROY—Population, 4,726—R. E. Stobart, Health Officer.

- 1 *a* ⋅ Yes.
  - b No.
  - c Yes.
  - d Yes.
  - e No.
  - f Yes.
  - g No-not strictly.
- 2 No.
- 3 None.
- 4 Yes.
- 5 Quarantine against children.
- 6 No.
- 7 a Undertaker.
  - b No established way of obtaining reports of births.
- 8 Not by the Board.
- 9 City sewers drenched with water by fire engine, some sewers changed to run to low water, four privy vaults filled and new water-tight ones made except two on sewers.
- 10 \$50.00
- 11 None.
- 12 About \$10.00 for burying carcass of hog and horse. Property holders bore other expenses.

PORT CLINTON—Population, 2,049—J. R. Johnson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
- g Yes.

3

- 3 Same rule as for diphtheria.
- 4 Yes.
- 5 No cases.
- 6 Yes.
- 7 a We have not established any yet.
  - b Have no established method but intend to take such measures as will attain the object.
- 8 Not yet.
- 9 Have none.
- 10 It is not agreed upon at present.
- H One.
- 12 Three dollars.

## PORTSMOUTH-Population, 12,394-Dr. H. H. Blankemeyer, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d According to circumstances. Generally isolate the case.
  - e Yes, and also public library.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None.
- 4 No.
- 5 None exept as attending physician sees fit.
- 6 Yes, of diphtheria and scarlet fever.
- 7 a None to this office, but clerk of cemetery board has a record.
  - b None, except by assessors.
- 8 Not by board of health.
- 9 None.
- 10 Health Officer and city physician combined, \$300.
- Il One.
- 12 \$1,000 for salaries and \$300 for medicines.

## PORT WASHINGTON-Population, 487-M. W. Nargney, Health Officer.

- 1 a Physicians have failed to report all cases.
  - b Do so when we know it.
  - c As far as we know.
  - e Do of late.
  - f Have had none.
- 2 Yes.
- 3 Follow your printed instructions.
- 4 R quire it, but have had none.
- 6 Yes.
  - a Require undertakers and physicians to report.
    - b Require physicians or attendants to report.
- 8 Yes.
- 10 None, except for expenses and time of actual service.
- 11 None. But we have a man in each road district of township to report anything that may come to their knowledge.
- 12 \$91. Board was late in organizing.

## PROCTORVILLE-Population, 480-Amos Ripley, Health Officer.

- $1 \quad a \quad \text{Yes.}$ 
  - b Yes.
  - f Have had none.
- 2 Physicians report to Health Officer.
- 3 None
- 4 Have had no measles in our town for five years.
- 6 No
- 7  $\alpha$  None except by the assessor every spring.
  - b Same as deaths do.
- 8 Not by the board.
- 9 We have caused a general cleaning up of kitchens, cellars, yards, hog pens, stables, streets and alleys.
- 10 Nothing as yet.
- 11 None.
- 12 None.

## PROSPECT—Population, 830—Dr. C. M. C. Thomas, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We attempt to find cause and remove. Have all drinking water boiled.
- 4 Ves.
- 5 Isolation.
- 6 Yes.
- 7 a We require a certificate before removal of body.
  - b None. We did attempt to enforce this rule but the reports were so incomplete as to be of no value, so we abandoned the effort.
- 8 Of deaths only.
- 9 General inspection of all houses, closets, wells, barns, etc., by members of board.
- 10 \$50 per year.
- 11 None, except when necessary.
- 12 About \$100.

## RAVENNA-Population, 3,417-Joseph Gledhill, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Placard and stool disinfectants.

- 1 Ves
- 5 Placarded, and quarantine the rest of the children.
- 6 Yes.
- 7 a Each undertaker has to have a burial or removal permit.
  - b We furnish each physician and midwife with blanks and get them once a month and keep a record of same.
- 8 Yes.
- 9 None made of any note.
- 10 Two dollars per day when he works.
- 11 None.
- 12 About \$250. This includes Health Officer and clerk.

## READING-Population, 3,103-Henry Wachendorf, Health Officer.

- 1 a Yes.
  - b Yes.
  - d All parties in house.
  - e Yes.
  - f Yes.
  - g By health officer.
- 2 Yes.
- 4 Yes.
- 5 That is left to attending physician.
- 6 Yes
- 7 a Reported immediately by physicians.
  - b Reported monthly by all concerned.
- 8 Yes.
- 10 \$100 per year.
- 12 \$20.23.

#### RENDVILLE--Population, 859--Dr. S. S. Jordan, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Perfect isolation.
  - d Yes.
  - e Yes.
  - / Yes.
- g Yes.
- 2 We do.
- 3 We look after the water supply, garbage and night soil.
- 4 Yes.
- 5 Perfect isolation.
- 6 Yes.
- 7 a Such records are kept in the minutes of the secretary's book.
  - b Such records are kept in the minutes of the secretary's book.
- 8 No
- 9 Since my appointment I have given each member of the board a district to be under his jurisdiction. The same are in good condition.
- 10 Nothing.
- 11 None.
- 12 Since my appointment, three months, \$10.
  - 14 S. B. H.

## RIDGEWAY--Population, 351--Dr. E. B. Crow, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Well children are kept at home, with best precaution house will allow.
  - d House placarded, but no regulation for quarantining of adults.
  - e Yes.
  - f Public funeral not allowed.
  - g Under supervision of health officer.
- 2 Yes.
- 3 Cleaning of garbage, wells, cisterns and water closets.
- 4 Yes.
- 5 None beyond what the health officer does.
- 6 Yes.
- 7 a All the physicians are requested to report to the health officer.
   b All the physicians are requested to report to the health officer.
- 8 Yes.
- 9 Nothing by the public, save that at the request of the board I went through the village and inaugurated a general cleaning up.
- 10 They have as yet made no allowance and I have presented no bill.
- 11 None.
- 12 I don't know.

# RIVERSIDE—Population, 2,169—Dr. H. C. Robinson, Health Officer.

- 1  $\alpha$  Yes.
  - b Yes.
  - c As much as possible.
  - d As much as possible.
  - e Yes.
  - f No.
  - g Yes.
- 2 Yes
- 3 Quarantining as regards school attendance.
- 4 Yes.
- 5 Same as typhoid fever.
- 6 Yes.
- 7 a All doctors are required to report same, and no funeral is allowed unless permit is secured from health officer.
  - b Doctors and midwives required to report same. Not strictly enforced.
- 8 Yes.
- 9 None, except a few sewers remodeled.
- 10 \$25 per month.
- 11 None; marshals act as such.
- 12 About \$400, including salary of health officer.

## RUSHVILLE—Population, 291--Dr. W. G. Lewis, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d Yes.

- f Yes.
- g Yes.
- 4 Yes.
- 6 Would be.
- 8 Will be.
- 9 None.
- 10 Not fixed.
- 11 None.

## SABINA-Population, 1,080-J. L. Johnson, Health Officer.

- 1 a We do.
  - b Yes.
  - c Yes.
  - d The same as children.
  - e Yes.
  - f Yes.
  - g By Board or attending physician.
- 2 Yes.
- 3 The same as in other contagious diseases.
- 4 We do.
- 5 The same as others.
- 6 No.
- 7 a Our cometery is within the corporate limits and the Board allow no remains interred or removed without a permit.
  - b We get them from the physicians.
- 8 None kept.
- 9 We completed sewer in center of town last summer and had all night soil and other garbage removed, and the town has not had a single case of contagion or infection during the year.
- 10 \$100 per year.
- 11 One. Salary, \$160.
- 12 Not to exceed \$10 ontside of salary.

#### ST. BERNARD-Population, 1,779-Dr. S. B. Howard, Health Officer.

- 1 a Yes; always report immediately.
  - b Yes.
  - c Yes.
  - d Yes.
  - e They are notified in twenty-four hours.
  - f Yes.
  - g Never have, but would if necessary.
- 2 Yes.
- 3 The precautionary measures.
- 4 Yes.
- 5 Isolation of all the children that are in the same house and disinfection.
- 6 Yes.
- 7 a Death certificates from attending physician and call from the undertaker for burial permits.
  - b All births must be reported every month at our regular meeting of the board of health by physicians and midwives.
- 8 Yes.

- 9 Improved sidewalks and gutters securing proper drainage. The cleaning up once a week of all dirt and filth from residences and streets.
- 10 \$150.
- 11 One.
- 12 \$411.32.

SALEM-Population, 5,780-Dr. P. E. Barckhoff, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d We prohibit attendants communicating with other people. Other members of house, namely wage earners, are permitted to follow their vocation when the Board is convinced that they do not come in contact with patient, and every precautionary means is being taken to prevent extension.
  - e The superintendent of schools is notified at once not to admit children to the schools until he receives notification from the Board of Health.
  - f In no case are public funerals permitted by this Board.
  - g Yes.
- 2 Yes.
- 3 We have spent some time to find the cause of our typhoid fever and have recommended the proper steps for its prevention. Our cases were mainly from wells, fourteen to twenty-five feet deep. We do not know that we have the power to prohibit the people from drinking water from these contaminated wells.
- 4 All cases of measles are reported by attending physicians.
- 5 A large percentage of cases are not attended by physicians. We do not hear from them until they have recovered, hence, have not enforced measures for the prevention of measles.
- 6 Yes.
- 7 a To secure reports of deaths the sexton of cemetery does not receive corpse for interment without a written permit from the Board of Health. This permit is issued to the undertaker by the Board on presentation of a certificate of death from last attending physician, on which is given name, age, sex, social relationship, birth residence, etc.
  - b Certificates of births are reported once a month by attending physician. It gives name of father, mother, child, nativity of parents, residence, etc.
- 8 Yes.
- 9 Our rules and regulations for public improvement are very much enlarged. We look to the property owner and tenant to keep their respective premises in a clean and healthy condition. This rule is not a dead letter but is being actually enforced even to the extent of invoking the law. This innovation has given public confidence in the Board which is being supported on all sides by the people. We laid, last year, four sewers involving quite a large sum of money, but which will effectually drain the town, enabling us to fill low places. Your vaccination order was executed until its temporary suspension.
- 10 \$400.00.
- 11 One for forty days and another the entire year.
- 12 We spent from February 1, 1893 to February 1, 1894, \$720.13.

## SALINEVILLE-Population, 2,369-Ralph Marsh, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 House placarded; not strictly quarantined as in cases of other infectious diseases.
- 4 No cases during the year.
- 5 None as we have had no cases.
- 6 Yes.
- 7 a Instruct undertakers to report; have generally done so.
  - b From physicians' reports.
- 8 Yes.
- 9 Opening old and making new sewers and new water-works pumped from well General cleaning of premises.
- 10 \$8 per month.
- 12 \$225.

## SENECAVILLE-Population, 461-Dr. W. Scott, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 Cleaning privy vaults.
- 4 Yes.
- 5 Same in scarlet fever and diphtheria.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 \$3.00.

## SHELBY-Population, 1,977-Dr. D. V. Summers, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.

- g Yes.
- 2 Yes.
- 3 We condemn suspected wells, and enforce general sanitary measures.
- 4 Ves
- 5 Quarantine, and same precaution as in diphtheria.
- 6 Yes.
- 7 a Each physician of the town is supplied with blanks giving, age, date, and cause of death, which we require to be filled out and filed with Health Officer before issuing a burial permit.
  - b Monthly report on blanks furnished by the board.
- 8 Yes.
- 9 None.
- 10 Ninety dollars per year.
- 11 One.
- 12 About one hundred and seventy dollars, including salaries.

## SHERWOOD-Population, 541-Dr. E. J. Porter.

- a Have had no scarlet fever cases this past year to know what would be done.
- 2 Yes.
- 3 None in particular.
- 5 Nothing special.
- 6 Of death yes, otherwise no.
- 7 a Burial permits have to be obtained by the undertaker from our board. This is our only means of securing above reports.
  - b None.
- 8º Yes.
- 9 Improved drainage, renovating privies, pig pens, and cesspools.
- 10 Nothing.
- 11 None.
- 12 \$2.25.

## SMITHFIELD—Population, 639—Dr. W.H. Wood, Health Officer.

- 1 a No. It seems impossible to get our board to take any interest in sanitary, matters.
  - b No.
  - c No.
  - d No.
  - e Done if at all by Health Officer.
  - f No.
  - g No. Only as directed by physicians.
- 2 No.
- 3 a None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None made.
- 10 Nothing.
- 11 None.
- 12 Nothing.

#### SMITHVILLE—Population, 482—Dr. I. A. Elson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfect stools and require all filthy places cleaned.
- 4 Ves
- 5 Had no cases last year. Strict quarantine when we have any.
- 6 Yes.
- 7 a Required to report to Health Officer.
  - b Required to report to Health Officer.
- 8 Yes.
- 10 None.
- 11 None.
- 12 None.

## SOMERSET-Population, 1,127- Dr. W. W. Fulkerson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f They would, but have had no deaths from contagious or infectious diseases.
  - g Yes
- 2 No.
- 3 None.
- 4 Yes.
- 5 We have had no cases.
- 6 Yes.
- 7 a No means have been taken.
  - b No means have been taken to secure reports of births.
- 8 No.
- 9 Clearing away of debris about houses, burying of dead rats, etc., and the disinfecting and filling up of a large number of privies.
- 10 \$6.00 for six months and \$1.00 for six months-\$42.00.
- 11 None.

## SOMERVILLE—Population, 330—Dr. E. H. Abbott, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Not required by our rules.
- 2 Yes, but we have had no cases.

- 3 Not been required.
- 4 We do not consider it necessary.
- 5 Not any.
- 6 Yes.
- 7 a By blank reports, by physician and undertaker.
  - b By blanks distributed to physicians.
- 8 Yes.
- 9 None.
- 10 Nothing so far.
- 11 None.
- 12 \$24.50 for blanks.

## SOUTH BLOOMFIELD—Population, 272—Dr. C. E. Blacker, Health Officer.

- 1 a It does.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 As yet there has been no occasion, and the Board has not acted.
- 3 None. I predict that the Board will be very conservative, because preventive medicine has heretofore been grossly neglected.
- 4 No.
- 5 None.
- 6 No.
- 7 a Virtually none.
  - b None wnatever beyond the report given to the assessor.
- 8 No.
- 9 None, and not at all badly needed.
- 10 No salary. Paid by the council for actual service, fee-bill basis.
- 11 None regularly, but one or more when needed.
- 12 About \$40.00.

#### SOUTH BROOKLYN-Population, 4,585-R. E. Stickney, Health Officer.

- 1 a We have all of the physicians report.
  - b We placard all houses for diphtheria and scarlet fever.
  - c Children are required to stay inside of yard.
  - d We are going to enforce all laws as near as we can.
  - e As soon as a case is reported, we notify the school teacher.
  - f They must have a private funeral.
- 2 We do, and placard houses.
- 3 The only measures taken were to placard the houses, and abide by the rules of the Board.
- 4 We do not.
- 5 There is nothing done.
- 6 There is.
- 7 a I have undertakers report all burials to me, then the physician keeps a list and reports.
  - b Physicians keep a list of their patients and also report.

- 8 There is.
- The last year we had about one mile of sewer built, and we require all privy vaults to be made water tight.
- 10 He receives nothing.
- 11 None.
- 12 Three dollars and fifty cents.

## SOUTH CHARLESTON—Population, 1,041—Dr. T. G. Farr, Secretary.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - Yes.
  - e Yes.
  - / Yes.
  - g No.
- 2 No.
- 3 None.
- 4 Yes.
- 5 None.
- 6 Yes.
- 7 a Call on undertaker.
  - b Call on physicians.
- 8 Yes.
- 9 None.
- 10 \$25.00.
- 11 One.
- 12 None.

#### STEUBENVILLE-Population, 13,394-Jos. Buchanan, Secretary

- 1 a No.
  - b No.
  - c No.
  - d No.
  - e No.
  - f Yes.
- g No. 2 . Yes.
- 3 None.
- 4 No. 5 No.
- 6 No.
- 7 a Cemetery reports, is the only way.
  - b None.
- 9 Nothing except keeping streets, alleys, and private premises clean.
- 10 \$2.00 a day while in service.
- 11 Not any.
- 12 \$300 includes pay of Health Officer and vaccinating.

STRASBURG-Population, 200-Dr. J. C. Schutzbach, Health Officer.

- 1 a All physicians give notice.
  - b None.
  - c None.
  - d Care about exposure and antiseptic precautions are used.
  - e Have been received.
  - f None.
  - g All disinfection orders obeyed.
- 2 No sir.
- 3 Disinfection of house, bedding and stools from patient, burying of stools.
- 4 Yes sir.
- 5 Do not allow measles patients to leave the premises, well or not well.
- 6 Partly.
- 8 Partly.
- 9 A general cleaning up all over the township.
- 10 Ten dollars.
- 11 Eight.
- 12 \$40.35.

SUGAR GROVE-Population, 275-Dr. T. R. Mason, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Require, but have not received any.
- 3 None at present as we have not had a case in corporation for three years.
- 4 Require none at present, as we have had no cases in corporation for a number of years.
- 6 No.
- 7 a None.
  - b None.
- 8 No general record, but I keep an account of all deaths.
- 9 All privy vaults were ordered disinfected every two weeks from May until October 15th, also all pig pens cleaned at least each week.
- 10 No salary fixed, very probable nothing.
- 11 None.
- 12 Only a small amount for blanks for clerk and Health Officer.

SUMMERFIELD—Population, 582—F. Rhodecker,, Health Officer.

- 1 *a* No.
  - b No.
  - c No.
  - d No.
  - e No.
  - f No.,
  - g No.

- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 Had, streets, alleys, and premises cleaned up last spring.
- 10 \$12.00 per annum.
- 11 None.
- 12 Twelve dollars.

## SWANTON-Population, 508-Dr. A. B. Lathrop, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No; if possible to remove without exposing others.
  - d Ves.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 They have never been called to act in cases of typhoid. There have been but a few isolated cases in the past two years.
- 4 They never have.
- 5 None so far.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 10 No stipulated fee.
- 11 None.

## SYCAMORE-Population, 722-R. S. Galleher, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d All possible precaution.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes, in all cases.
- 3 We use all means in our power to avoid and prevent the cause.
- 4 Yes; the same as other cases.
- 5 Perhaps not so strict as in other contagious or infectious diseases, but try and control as soon as possible.
- 6 Yes, by the Health officer.
- 7 a The doctors are required to furnish to the board the names of all persons dead of any contagious or infectious disease.
  - b No record of births is kept by our board.
- 8 Only deaths caused by contagious or infectious diseases.

- 9 Public sewers put in in all places where necessary to carry off or drain impure water.
- 10 \$30.00 per year.
- 11 By the board.
- 12 About \$100.

## SYLVANIA-Population, 545-Geo. A. Crandall, Health Officer.

- 1 *α* Yes.
  - b Yes.
  - c Yes.
  - d Quarantine all.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Nothing except to order a general cleaning up of premises.
- 4 Yes.
- 6 No.
  - a None except require a certificate of death to be deposited by undertaker or other person in charge.
  - b None.
- 8 No.
- 9 None.
- 10 \$24 per year.
- 10 None.
- 12 \$40.63.

#### THORNVILLE-Population, 405-Dr. G. H. Pugh, Health Officer.

- 1 a They do.
  - b They do.
  - c When exposed to the poison they do.
  - d They are unless they have a written permit from the attending physician.
  - e They do.
  - f Strictly private.
  - g They do.
- 2 Yes.
- 3 Everything tends to a good sanitary condition, cleaning up generally, disinfection, etc.
- 4 Yes.
- 5 Quarantining and not letting well children come in contact with the sick.
- 6 Yes.
- 7 a Reports from undertaker and the physicians.
  - b None.
- 8 There is of the deaths.
- 9 A general good cleaning up of the town.
- 10 Have not settled on any yet.
- 11 None.
- 12 Not to exceed \$15.

TIFF1N-Population, 10,801-Dr. J. Bridinger, Health Officer.

- 1 *a* .Yes.
  - b Yes.
  - c Yes.
  - d Isolate the sick and one person to attend and stay in the room.
  - e All cases reported to superintendent.
  - e Yes.
  - f Yes.
- 2 No.
- 3 Cleanliness is observed around premises, stools disinfected and such other measures to prevent contagion.
- 4 Yes.
- 5 Cards put up and same as in scarlet fever.
- 6 Yes.
- 7 a Physicians and undertakers required to furnish certificates of death and obtain permit from Health Officer before burial.
  - b Physicians and midwives required to report to Health Officer all births atnded by them.
- 8 Yes.
- 9 Some few lateral sewers to complete sewerage system and water closets connected with sewers. Garbage contractor to remove all waste three times a week. All sewers flushed with flushing tank once a week.
- 10 \$300.
- 11 One.
- 12 About \$22,00.

TIPPECANOE—Population, 1,465--H. A. Hawver, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- z Yes.
- 3 Drinking boiled water, stools disinfected.
- 4 Yes.
- 5 Quarantine children who have had it.
- 6 No.
- 7 a Doctors must furnish undertaker with death certificates, which are recorded by clerk of board of health.
  - b Recorded the same as deaths. Doctors and midwives required to make monthly reports of births.
- 8 Yes.
- 9 No.
- 10 \$100 per year.
- 11 None.
- 12 \$322.50.

TIRO-Population, 274-Dr. W. H. Guiss, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.

- d No.
- e Yes.
- f Yes.
- g Yes.
- 2 No.
- 3 None.
- 4 Yes.
- 5 Isolation.
- 5 None.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 None.
- 11 None.
- 12 None.

#### TONTOGANY-Population, 175-Dr. A. Eddmon, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Quarantine adults with patient also, in house.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection of premises, also cleaning of water wells.
- 4 Ves
- 5 Quarantine of well children in house with patient.
- 7 a The Health Officer secures report through physicians.
  - b Through the Health Officer.
- 8 No, there will be hereafter.
- 9 Two water wells drilled 100 feet deep for the purpose of obtaining pure drinking water. This corporation has now four wells of that kind and depth.
- 9 Nothing.
- 12 None.

## TROY-Population, 4,494-Dr. Thos. M. Wright, Health Officer.

- 1 a Yes.
  - b Yes.
  - c When possible well children are removed from the premises, otherwise kept in separate apartments.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Case quarantined; drinking water, if from well, required to be boiled before using, if from hydrant, not; stools disinfected and buried in dry soil. Sanitation attended to scrupulously.

- 4 No.
- 5 None.
- 6 Yes.
- 7  $\alpha$  The undertakers report funerals. The Health Officer collects them and reports.
  - b None.
- 8 No.
- 9 A great many wells ordered abandoned, water-works put in; more thorough cleaning of privies, better drainage and more thorough removal of garbage.
- 10 \$120 per year.
- 11 One.
- 12 I don't know.

## UHRICHSVILLE—Population, 3,842—Dr. J. E. Grove, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes (we isolate patient).
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 We have tried, but physicians will not report.
- 3 None.
- 4 No.
- 5 None.
- 6 A record of those reported.
- 7 a None.
  - b None.
- 8 No.
- 9 There was a little extension of sanitary sewer system.
- 10 \$50
- 11 The city marshal and assistants act.
- 12 About \$50.

#### UNION CITY-Population, 1,293-Dr. Wm. M. Grimes, Health Officer,

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Attending physician gives treatment.
  - e Yes.
  - / Yes.
  - g Yes.
- 2 Yes.
- 3 House flagged and disinfected in bad cases.
- 4 Yes.
- 5 Placard the house.
- 6 I keep a record.
- 7 a Physicians report same.
  - b Same as deaths.
- 8 Yes, by Health Officer.

- Privies cleaned. Filth of all kinds removed. Wells examined and when the water found to be bad, the well condemned by the Board and ordered cleaned.
- 10
- None, only when great danger is threatened, as the smallpox scare last fall; then 11 we had eight for fourteen days.
- 12 During the smallpox scare guarding roads and suspects, about \$150.

UPPER SANDUSKY-Population, 3,572-Dr. O. C. Stutz, Health Officer.

- a Yes.
  - b Yes.
  - c Yes.
  - d No.
  - e Yes.
  - f Yes.
  - g No.
- No.
- 3 None.
- 4 Yes.
- 5 Isolate and keep home from school.
- 7 a From the undertakers.
  - b None.
- Yes, of deaths, not births. 8
- 9 None.
- 10 \$125.
- 11 None.
- 12 About \$250.

URBANA-Population, 6,510-Dr. H. C. Houston, Health Officer.

- 1 a Yes.
  - b Yes.
  - c No, but they are not allowed at schools.
  - d Take all possible precaution, except to quarantine.
  - e No.
  - f Yes.
  - g No.
- 2 Yes.
- 3 None.
- 4 Ves.
- 5 None.
- 6 Yes.
- 7 a Burial permits can not be obtained except by order of health officer, and his order is given only when a physician's certificate is presented, giving particulars of decedent's age, nativity, residence, cause of death, and so
  - b Physicians and midwives are required to report all births within 48 hours.
- 8 Yes.
- 9 None.
- 10 \$150.00.

- 11 One constantly and two in summer months.
- 12 About \$250.00.

## VANDALIA-Population, 265-Dr. W. H. Riley, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
  - No.
- 3 None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 A general cleaning up has been done.
- 10 Nothing.
- 11 None.

REMARKS—Our Board of Health has neglected to do many things that should be done, on account of township Board of Health.

#### VAN WERT--Population, 5,512-Dr. E. L. Wilkinson, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Either quarantine or use other precautions.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Try to.
- 3 General sanitary measures. Have had very few cases.
- 4 Try to, but as many have no physician, reporting cases has totally failed.
- 5 Quarantining as much as practical and especially preventing exposed persons from appearing in public places.
- 6 No, except physicians' reports are filed.
- 7 a None by Board of Health.
  - b None by Board of Health.
- 8 No.
- 9 Compelled persons connecting water closets on sewers to construct cesspools and prevented persons from keeping hogs within a specified limit.
- 10 \$100.00.
- 11 One.
- 12 About \$210.00.

## VERSAILLES-Population, 1,385-Dr. Wm. H. Rike, Health Officer

- 1 a Yes.
  - b Yes.
  - c Yes.
  - 15 S. B. H.

- d Yes.
- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 The source is sought for and remedied if possible, and general directions to attendants.
- 4 Yes.
- 5 Quarantine of patient and those exposed who have not had disease.
- 6 Ves
- 7 a The undertaker is required to obtain permit for burial, with attending physician's certificate of cause of death.
  - b Physicians and midwives are required to report within ten days after birth.
- 8 Yes.
- 9 300 rods of 20-inch sewer and 40 rods of 12-inch sewer were put in.
- 10 \$48.00 per annum.
- 11 One.
- 12 \$91.00.

## WADSWORTH--Population, 1,574--Dr. C. N. Lyman, Health Officer.

- $1 \alpha \text{ Yes.}$ 
  - b Yes.
  - c Yes.
  - d As far as we can.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Health Officer does.
- 3 Disinfection of stools. No communication with patient except by attendants.
- 4 Yes.
- 5 Quarantine, placards, and so forth.
- 6 No further than the monthly report of health officer.
- 7 a All cases are reported by the undertaker, also to clerk of cemetery trustees before burial permit is granted.
  - b No.
- 8 Health officer keeps a record of deaths.
- 9 Some attention to sewerage.
- 11 None
- 12 Between \$200.00 and \$300.00, during case of smallpox.

#### WAPAKONETA-Population, 3,616-John R. Mouch, Health Officer.

- 1 / a Yes.
  - / One.
- 2 Yes.
- 4 No.
- 6 No.
- 7 a Gotten from undertakers.
  - b Doctors' report.
- 8 Yes.
- 9 Our town is in good sanitary condition.

- 10 The fees were \$30.75 for the year.
- 11 One.
- 12 \$68.12.

WARREN-Population, 3,973-Dr. M. L. Williams, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes, but isolate if possible.
  - d Quarantine.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 a Certificate from physician before burial permit is granted.
  - b Monthly reports on blanks furnished by board.
- 8 Yes.
- 9 Nothing beyond extension of sewer system.
- 10 \$5 per month.
- 11 One and assistant when necessary.
- 12 Current expenses proper, \$1,097.82; permanent improvement, \$236.43; expense paid and taxed against property, \$166.01; total, \$1,500.26.

WARSAW-Population, 376-S. W. Willis, Health Officer.

- 1 a Have had no cases.
- 2 Have had no cases.
- 3 None.
- 4 No cases.
- 5 None.
- 6 Should we have any-yes.
- 7 a The Board requires the attending physician to file with the clerk of the Board a certificate of death and cause.
  - b The Board requires the attending physician to file with the clerk of the Board a certificate of death and cause.
- 8 Yes.
- 9 Nothing.
- 10 Unsettled.
- 11 None.
- 12 None.

WASHINGTON C. H.—Population, 5,742-J. M. Edwards, Health Officer.

- 1 a Yes.
  - b Yes.
  - c In separate rooms.
  - d Only nurse permitted to see patient.
  - e Yes.

- f Yes. g Yes, or of attending physician. Yes. 3 Clean premises; pure water. 4 Yes. 5 Quarantine.

- Yes.
- 7 a Undertakers furnish same on blanks.
  - b All births are reported by attending physicians at or before the close of the
- Yes. 8
- 9 None.
- 10 \$100.
- 11 Four, one for each ward.
- 12 \$120.

## WASHINGTONVILLE—Population, 1,027—Dr. J. C. Gorsuch, Health Officer.

- 1 a Yes.
  - b No.
    - c Yes.
    - d Yes.
    - e Yes.
    - f Yes.
  - g Yes.
- 2 Yes.
- 3 Attention to general hygienic surroundings such as water, privy vaults, etc. Disinfection of alvine discharges of fever patients.
- 5 Patients are under quarantine during an epidemic.
- 6 Nothing, only reports to State Board of Health.
- 7 a Notification by attending physician to Health Officer.
  - b Notification by attending physician to Health Officer.
- No.
- 9 None.
- 10 Salary not fixed.
- 11 One.
- 12 Small amount by the Health Officer.

#### WATERVILLE—Population, 586—Dr. Samuel Downs, Health Officer.

- 1 a Yes.
  - b Yes.
  - c The well children are separated from those afflicted.
  - d No.
  - e Yes.
  - f Yes.
  - g Not in all cases.
- 2 It does not, but will in the future.
- 3 Thoroughly disinfect all places that would have a tendency to create the microbe: The hog pen and slaughter house nuisances within the corporation. All outhouses to be built, and old ones on the modern plans suggested by the State Health Officer.

- 4 Yes.
- 5 Isolation and strict quarantine.
- 6 Yes.
- 7 a We have requested physicians to fill out blanks, stating date of death, name in full, age, name of undertaker and place of interment.
  - b Orders have been issued to physicians to report all births to the Health Officer, but it is not always complied with.
- 8 Yes, when they are reported.
- 9 Abatement of slaughter houses and hog pens and general cleaning of streets and alleys.
- 10 Nothing.
- 11 None.
- 12 None.

## WAVERLY-Population 1,567-Geo. D. Emmitt, Health Officer.

- 1 a Generally within twelve hours.
  - b Immediately on receipt of physician's report.
  - c Isolate patient from well children if possible.
  - d Prohibit contact of family with patient.
  - e Yes.
  - f Yes.
  - g Yes, after recovery or death of patient.
- 2 Yes.
- 3 By keeping streets and alleys clean and water as pure as possible.
- 4 Yes.
- 5 Same as in other contagious diseases.
- 6 Yes
- 7 We have not kept a record of deaths and births having received no report from physicians.
- 9 Nothing.
- 10 \$1.00 a year.
- 11 None.
- 12 \$145.19.

## WAYNESFIELD-Population, 480-Dr. W. S. Turner, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d We urge them to be very careful.
  - e Yes.
  - f Yes.
  - g Never have done so.
- 2 No.
- 3 Disinfection of privy vaults, removal of all garbage, general cleanliness.
- 4 No.
- 5 Have had no measles for four or five years.
- 6 No.
- 7 a No particular means, save through physicians.
  - b None.
- 8 Not in connection with Board of Health.

- 9 One ice house which was abandoned for that purpose and which was used as a public privy, was removed by order of Board of Health. Several privies were also renovated. General cleaning up of town.
- 10 Nothing.
- 11 None.
- 12 Nothing except for books, etc.

WAYNESVILLE-Population, 704-Dr. W. E. Oglesbee, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d. Ves.
  - e Yes.
  - f Yes.
  - g Yes, by Health Officer.
- 2 Yes
- 3 Boil drinking water when there is a case, and disinfect stools with 1 to 200 bichloride mercury.
- 4 We try to secure reports.
- 5 Disinfection and quarantine.
- 6 Yes.
- 7 a By a great deal of trouble we can get a report of deaths.
  - b Same as above.
- 8 A perfect one of deaths, imperfect of births.
- 9 We started a slop cart July 1, and run it until November 1. Had one or two cesspools filled up. Required all owners of hog pens to keep them in as perfect sanitary condition as possible. Had all the old garbage dumps in the corporation removed to a point out of town.
- 10 Nothing.
- 11 None.
- 12 \$120.00.

WELLINGTON-Population, 2,069-M. W. Lang, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Follow the directions in pamphlet issued by State Board of Health as closely as possible.
- 4 Yes.
- 5 We placard the house and use usual precautions.
- 6 Not unless they prove fatal.
- 7 a I require a monthly report from the undertaker, which gives cause of death.
  - b I think no record has ever been kept.
- 8 Yes, of deaths by undertaker.

- 9 General cleaning up and enforcing the sanitary laws.
- 10 \$100.00 per year.
- 11 The Health Officer does most of the work, and the marshal assists him.
- 12 \$191.95.

## WELLSTON-Population, 4,377-J. B. Palmer, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d No.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection, burial of stools and isolation of patient.
- 4 Yes
- 5 Quarantine against patient.
- 6 Yes.
- 7 a Undertaker is required to keep a correct report.
  - b All doctors do not report. Some say they keep no record.
- 9 Vacate privy vaults and use barrels.
- 10 \$150.00 per year.
- 11 None.
- 12 \$300.00.

## WELLSVILI.E-Population, 5,247-J. F. Davidson, Health Officer.

- 1 a Such is the resolution, but it is not strictly enforced.
  - b Yes.
  - c No.
  - d No.
  - e No.
  - f No.
  - g No.
- 2 No.
- 3 None.
- 4 No.
- 5 None.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 \$45.00.
- 11 None.
- 12 Salary of officers.

WEST ALEXANDRIA-Population, 575-Dr. L. J. Ashworth, Health Officer.

- 1 a Yes.
  - c Yes.

- d Yes.
- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 Keeping the stools and alleys clean, and watching that no impurities get into wells. For several years there have been but few cases of typhoid here.
- 4 No.
- 5 None. The doctors say give them plenty of cold water to drink, and keep them warm.
- 6 It is not.
- 7 a Blanks for that purpose have been handed to physicians, but have never been returned filled out or otherwise.
  - b Same as above.
- 8 None to my knowledge.
- 9 A line of sewer runs through the town north and south, which drains the central part of the village and carries off water, which heretofore had been standing in pools and soaking into cellars.
- 10 \$25.00
- 11 None.
- 12 \$30.00.

WEST ELKTON-Population, 300-Dr. E. Holaday, Sanitary Police.

- a Have had no cases.
  - b Our village during the past year.
- 2. No.
- 3 Privies, pig pens and everything cleaned up every three months.
- 4 No. No measles here.
- 5 None.
- 6 No.
- 7 a None.
- 8 None.
- 9 None.
- 10 None.
- 11 One.
- 12 About \$50.00.

WEST LIBERTY—Population, 1,200—Dr. B. S. Leonard, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Adults are forbidden to come in contact with patient. Not quarantined.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Disinfection of discharges, good ventilation, isolation of patient, care of water supply and bed clothing.
- 4 Yes.

- 5 Quarantine of patient and attendant.
- 6 Yes.
- 7 a Permit for removal of corpse required
  - b No record kept.
- 8 Record of deaths but not births.
- 9 None.
- 10 \$75.00.
- 11 One.
- 12 \$112.00.

#### WEST MANCHESTER--Population, 219-David Allen, Health Officer.

- 1 a Yes.
  - b Yes.
  - c We are prepared to act in case we have diphtheria.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 A general cleaning up of the town.
- 4 Yes
- 5 We have had but two cases of measles since Board of Health was organized and these were in the country.
- 6 No.
- 7 a None.
  - b We have blanks furnished by township clerk and are keeping a record of births.
- 8 Of births only.
- 9 A general cleaning up, require water tight boxes for privies and have them emptied once a month during warm months.
- 10 No fixed salary.
- 11 None.
- 12 About \$100.

#### WEST MILTON-Population, 796-Dr. W. H. Kessler, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Thorough disinfection of all discharges from sick patient, also require nurses and family to use boiled water and keep the premises in sanitary condition.
- 4 Yes.
- 5 Quarantine.
- 6 No.
- 7 a None.
  - b None.
- 8 No, except deaths.

c Yes. d Yes.

```
9 None.
10 $75.00.
11 None.
        WESTON-Population, 1,000-Dr. Geo. B. Spencer, Health Officer.
 1 a Yes.
   b Yes.
   c Not always, some exceptions.
   d Yes.
   e Yes.
   f Yes.
   g Yes.
 2 Yes.
 3 Strict attention to supply of drinking water.
5 Isolation and care of diseased.
 6 No.
 7 a None.
   b None.
8 No.
9 General renovation.
10 Nothing.
11 One at a salary of $15 per annum.
12 $34.00.
      WEST UNION-Population, 825-Dr. W. R. Coleman, Health Officer.
   a No.
   b No.
   c No.
   d No.
   e No.
   f Yes.
   g No.
2 No.
3 None under direction of board.
4 No.
5 None.
6 No.
7 a None.
   b None.
8 No.
9 None.
10 None.
11 One.
12 None.
       WHITE HOUSE-Population, 507-Dr. L. Bennett, Health Officer.
   a Yes.
   b No.
```

- e Yes.
- f Rule of Board of Health requires it.
- g Yes
- 2 Board requires them to adhere strictly to rules and recommendations of State Board of Health.
- 4 Yes.
- 5 Same as No. 2.
- 7 a Blanks are distributed to our physicians who are requested to report.
  - b Same as 7a.
- 8 Reports simply filed.
- 9 Keep streets and alleys quite clean.
- 10 Nothing.
- 11 Our village marshal officiates.

## WINDHAM-Population, 437-H. A. Wadsworth, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d . Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 We have had no cases.
- 4 No.
- 5 Quarantine.
- 6 Yes.
- 7 a A record is kept of deaths.
  - b No.
- 8 No and Yes.
- 9 None.
- 10 Nothing.
- 11 None.
- 12 None.

#### WILMINGTON-Population, 3,079-Dr. G. M. Austin, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d We quarantine all adults who are in the room with, or are nursing those affected.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes
- Great care in keeping wells pure, and in disinfecting and destroying the discharges of those affected with the disease.
- 4 No
- 5 None. The disease has usually been scattered broadcast over the town before the nature of the first case was apparent.
- 6 Yes.

- 7 a Our undertakers are required to furnish a death certificate with attending physician's signature before a burial permit is issued.
  - b Our physicians have been provided with blank postal cards, but have been very negligent in making reports.
- 8 A full record of deaths.
- 9 The street cleanings and garbage are now removed out of the corporation; until this year they were put into the fills made in grading new streets.
- 10 \$75.00.
- 11 One.
- 12 \$200.00.

## WILLSHIRE-Population, 566.-Dr. J. K. Ross, Health Officer.

- 1 a Yes.
  - b Yes.
  - c In separate room.
  - d Use disinfectent and change of clothing.
  - e Yes, and children from families where the disease is are not permitted to go
  - f Yes.
  - g Yes.
- Yes.
- 3 Use disinfectant and compel the use of boiled water.
- 4 Ves
- 5 Quarantine the family.
- 6 Yes.
- 7 a None.
  - b None.
- 8 No.
- 9 None.
- 10 \$30.00.
- 11 One.
- 12 \$50.00.

## WOODSTOCK-Population, 316.-D. P. Smith, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Strictly.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Village is well drained, and has an extra supply of good water; we did not have a case last year. We keep our privies well cleaned.
- 4 Yes.
- 5 Quarantine.
- 6 Yes.
- 7 a The physicians have a record book.
  - b Physicians have a book for that purpose.

- 8 Yes.
- 9 The streets and alleys were both kept clean and dry. Considerable tile ditching done. Privies and hog pens kept clean and well disinfected.
- 10 Nothing only for services rendered.
- 11 None.
- 12 About \$20.

## WOODVILLE-Population, 622.-Dr Henry Busch, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 Yes.
- 3 Same as in diphtheria except quarantine.
- 4 Ves.
- 5 Nothing.
- 6 No.
- 7 a Certificate of undertaker, and attending physician.
  - b Attending physicians or midwives must report to the board.
- 9 Some lateral sewerage connecting with main sewer.
- 10 No fixed salary.
- 11 One.
- 12 About \$500.

## WYOMING-Population, 1,454-A. M. Van Dyke, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Yes.
  - e Yes.
  - f Yes.
  - g Yes.
- 2 No.
- 3 None in particular.
- 4 Yes.
- 5 Only usual placarding of house and subsequent necessary disinfection.
- 6 Yes.
- 7 a Physicians make returns of death.
  - b Physicians make monthly reports.
- 8 Yes
- 9 One street sewer constructed; automatic flushing tanks (five) on line of sewer; sewer pipe laid in two natural waterways; pipe partly covered.
- 10 \$100.00.
- 11 One.
- 12 \$165,00.

#### YELLOW SPRINGS-Population, 1,375-Dr. W. M. Haffner, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.

- d Yes.
- e Yes.
- f Yes.
- g Yes.
- 2 Yes.
- 3 All nuisances are abated, foul wells, cisterns, cellars, stables etc., are purified.
- A Vec
- 5 Keep all unisances abated and premises clean.
- 6 No.
- 7 a None.
  - b None.
- 8 No.
- 9 Drains, ditches and sewers made, and streets, and gutters kept clean, etc.
- 10 Forty cents for every nuisance abated.
- 11 Health officer acts in that capacity.
- 12 About \$100.

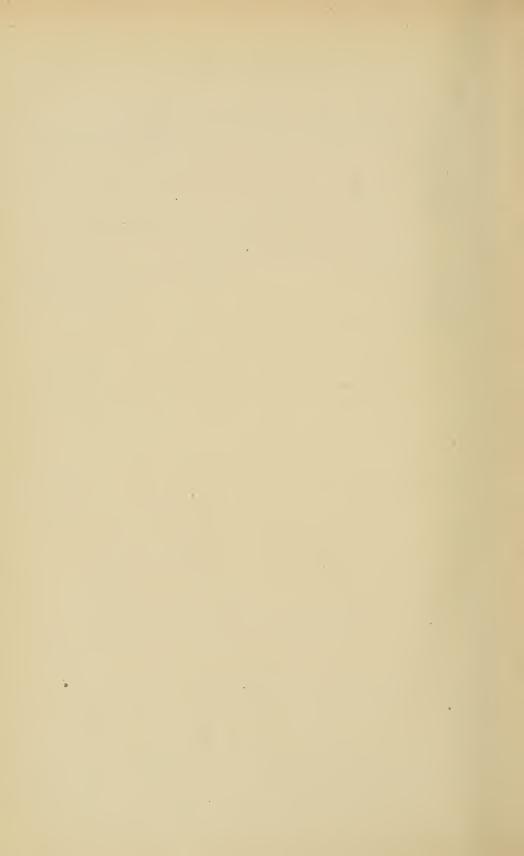
## YOUNGSTOWN-Population, 33,220-Dr. H. E. Welch, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Yes.
  - d Quarantine of all exposed persons.
  - e Yes.
  - f Yes, except typhoid.
  - g Yes.
- 2 Yes.
- 3 No quarantine, but houses are placarded and disinfected.
- 4 Yes.
- 5 Same as other contagious diseases except that adult members of families are not quarantined.
- 6 Yes.
- 7 a Before obtaining permit to bury, undertakers are required to bring certificate of death signed by attending physician stating cause of death. Penalty for failure to do so.
  - b All physicians and midwives are required to report births every month to the Health Officer.
- 8 A complete record of both in detail.
- 9 Three miles of sewers built; ten miles of street grading done; six miles of flagstone sidewalk; one mile street paving, fire brick.
- 10 \$5.00 per month.
- 11 At present, two. During summer months, five.
- 12 \$49.00.

## ZANESVILLE-Population, 21,009-Dr. H. T. Sutton, Health Officer.

- 1 a Yes.
  - b Yes.
  - c Only in case the disease is known to be very malignant.
  - d Not in mild cases.
  - e Yes.

- f Yes.
- g Yes. That is, we ascertain to a certainty that it has been done.
- 2 Our rules require it, but we find it difficult to get the physicians to comply.
- 3 When a case is reported our policeman visits and inspects the premises, and gives them directions in regard to disinfecting the excretions from the patient.
- 4 No.
- 5 None except to prohibit children from a house where the disease exists attending school who have not had measles.
- 6 We keep a record of diphtheria, scarlet fever and typhoid fever only.
- 7 a We trust to the honor of the undertakers, and call at their places of business at the end of each month and get them.
  - b Do not require them reported.
- 8 Of deaths only.
- 9 None of any consequence.
- 10 \$50.00 per month.
- 11 One.
- 12 \$1,900.00.



## Abstract of Reports

OF

# Deaths and Their Causes

IN THE FOLLOWING

Cities and Towns in Ohio,

FOR THE

Year Ending December 31, 1893.



ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JANUARY, 1893.

Premature and still-births	0 0 4 5 6 5 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total violence	1074500 110 10100 100 118
Total developmental dis-	7   68741   7   7   1   1297   5
Pneumonia	1 120 X 0 9 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pleurisy.	
Meningitis	
Deart disease,	- 1-8580   1 1-1   - 1 1 139-1조 - 마양라드요-   1 18 14 1   - 1994-1중
Convulsions. Gastritis and peritonitis	- 1522-rou   1- 1- 10   10   10   15
Bronchitis,	0 1 4 4 7 0 - 1   - 1   - 1   0   1   50   1   5
Bright's disease.	- 1517-5x-1111-1111-0115-1172
Apoplexia.	u  wacatu
Total local diseases.	2 1897 1 9×81 1 × 8× 111 × 9× 1   8
Phthisis pulmonalis.	8 5 1 1 1 2 1 1 2 1 1 2 1 2 1 2 1 2 1 2 1
Cancer.	의 [ [ 문문의 가   [ 1   ]   1   [ 의 [ 의 의 ] - ] 조
Total constitutional dis-	e 22222 e 2 - 2 2 2 2 2 2 2 2 2 2 2 2 2
Whooping cough.	Title Partie Title Title
Typhoid fever.	11128-21111111-18
Tousilitis.	
Scarlet lever	11:17:17:17:11:11:12:11:11
Puerperal fever.	φ
Medarial fevers	
Dyscutery.	1 1 1 2 2 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1
Diarrhœal diseases.	111911111111111111111
Сподета тотрия	-
Cerebro-spinal meningitis.	
Croup and diphtheria	
Total aymotic discases	75 1282141 0121 4404 01755 8
Over one year,	9 1952200 1 1 10 10 1 1 1 15 1 9 8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
bus stray and taour lato'f	
Total under one year.	
Annual rate per 1,000.	2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
excjnqeq	
Total deaths, all causes, premature and still-births	25, (60) 11, 128, 200 20, 183 20, 183 20, 183 20, 184
	e   288-28222222222228888   e
Population, census 1890.	25, 601 26, 502 26, 503 26, 503 26, 503 27, 603 28, 503 27, 603 28, 503 27, 603 28, 503 28, 50
	33,30
Cities of 10,000 inhabitants (census 1890), or over.	
Cıti	Akron Control Control Control Control Control Collectand Collenbus Dayton Dayto

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JANUARY, 1893.

Premature and still-births.	1 161 161 172 17 17 191
Total violence.	-::::::::::::::::::::::::::::::::::::::
Total developmental dis-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pneumonia.	21 1 1 1 1 21 00
Pleurisy.	
Meningitis.	:-::::::::::::::::::::::::::::::::::::
Heart disease.	: : wor : ig - ig :   124
Gastritis and peritonitis.	: 9   64   18   54   1   1   1   1   1   1   1   1   1
Convulsions.	[00-11   101   1   1   102   1-15
Bronchitis	1 1 2 1 - 1 - 1 1 1 1 1 1 1 1 1 1 1 1 1
Bright's disease.	
Total local diseases. Apoplexia	@@@F4%F8@@@ 4444 P
Phthisis pulmonalis.	
Сапсет.	
·səseə	HD : HOUSEARSIA H :   8
Total constitutional dis-	
Whooping cough.	
Typhoid fever.	
Tousilitie.	
Puerperal fever. Scarlet fever.	
Measles, .	
Malarial fevers.	
Dysentry.	
Diatrhœal diseases.	17 11 11 11 11 11 11 11 11 1
Cholera morbus.	
Cerebro-spinal meningitis.	<u></u>
Cholera infantum,	
Croup and diphtherra.	-
Total zymotic diseases.	
Total under five years and over one year.	
Total under one year.	
Annual rate per 1,000.	7.7.2.0 0.0.
Total deaths, all cau-es, premature and still-births excluded.	117 122 122 123 124 143 143 143
	7,607 7,604 7,141 7,141 7,141 7,555
Population, census 1890,	10 mm m m m m m m m m m m m m m m m m m
Cities of Icss than 10,000 inhabitants.	Alliance Bellaire. Bellaire. Francia. Francia. Calli olis. Lancaster Marron Mid Ecoun I Trbana Vashir gton C. ff. Wooster Totals.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF PERRUARY, 1893.

Premature and still-births.	mmqgater     mm       mm
Total violence.	[-Z1-211-11-11-110014   S
To al developmental dis-	2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
1 neumonia.	2-3-2-15-1 x 1 2-1 5
Picuri-y.	: 100 21- : . : : : : : : : : : : -   12
Mennights.	01-5522
Heart disease	
Gastritts a d periton tis.	1, 1222 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Convul-fons.	0 12 12 0 0 1 1 1 1 1 1 1 1 1 1 1 2 2 2 1 1 2 1 1 2 2 2 2 1 2
Brouchitts.	
Apo-l- zia. Brig 1's disease.	T-0777 1-111-11-11-11-11-11-11-11-11-11-11-11-
	X 10 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Puthisis pulmonalis,  'Yotal local diseases.	992979   122   172   12 29   123
Cancer,	1
68.564.	# # # # # # # # # # # # # # # # # # #
Total constitutional dis-	
Whooping cough	
Typhoid lever	1 1 2 2 - 1 - 2   1 - 1 - 1   1   2
stritettoT_	
Scarlet lev r.	
Puer peral rever	
Measles.	2 : : : : : : : : : : : : : : : : : : :
Dysentry	1 7
Diatriceal diseases.	121
Choleta morbus	
Cerebro-spinal meningitis.	
Cholera infantum	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Croup and diphtheria.	
Total symotic diseases.	
Total under five years and over one year.	
Total under one year.	- : : : : : : : : : : : : : : : : : : :
Annual rate per 1,000.	######################################
premature and still-births excluded.	8881888655185745888
Total deaths, all causes	
	2128220232222222222222222222222222222222
Population, cenaus 1590.	2012 20 20 20 20 20 20 20 20 20 20 20 20 20
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census 189 )	
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S G G	orth New Merchants of the state
Cities of 10,000 inhabitant or over.	Akron Chillheothe Chillheothe Cleed land Cleed land Cleed land Cleed land Est Liverpool Fronton Lima Mansfeed Newark Fort-mouth Sandusky Springfield Totals. Zauesville.
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Alliance Bellare Defiance Defiance Fostoria Gallipolis Marion Middletown Middletown Warren Warren Welston Welston Welston Welston Welston Welston

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MARCH 1893.

Premature and still-births.	5   5   5   6   6   6   6   6   6   6
Total violence.	managament interpretation
Total developmental dis-	
Pneumonia.	COLESCEEDA MOREN - EXCI
Plentisy	:::":":":::::::::::::::::::::::::::::::
Meningi is.	01 - 18 x & x & v v v i i v i i - i v v i   18
Heart disease.	188422-01-00 10:00-12
Gastritis and peritonitis.	4: 178-8-1 1-1 14 16-18
Convulsions.	8 : 2 9 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Bronchitis.	0112-00 01 01
Apoplexia Bright's disease.	
Total local diseases.	
Phthisis pulmonalis.	
Сапсет	8
eases.	
lotal constitutional dis-	
Whooping cough.	1 : : : : : : : : : : : : : : : : : : :
Typhoid fever.	ia x 3-51
Tousilitis.	NON-1X
Puerperal tever. Scarlet tever.	- : : : : : : : : : : : : : : : : : : :
Aleasles.	
Malarial levers.	N : : : : : : : : : : : : : : : : : : :
Dyscutry.	11:0001   - 11   11 - 11   2
Diarrhie d diseases.	<b>→</b> 1 → 1 → 1 → 1 → 1 → 2 →
Cholera morbus.	
Cerebro-spinal meningitis.	-::::::::::::::::::::::::::::::::::::::
Cholera intantum	11116-1111111-1116
Croup and diphtheria.	전 : 12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total zymotic diseases	52 54 55 25 54 1 4 4 4 4 1 - 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Total under five years and over one year.	100 170 00 00 00 N
Total under one year.	04 SESS-17 201- 17 SES 1 60
Annual rate per 1,000.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
total deaths, all causes, premature and still- births excluded.	송원구충훈문고문왕att국왕a由급등교왕 <u>중</u>
Population, census 1893.	25 (189 ) 25 (18
	=
Cities of 10,000 inhabitants (census 1890), or over.	Akron Canton Canton Circlinatit Cleveland Columbus Columb

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MARCH, 1893.

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Premature and still-births.	
T' tal violence.	erileiinniiiineneile
eases,	1-00 1-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 otal nevelopmental dis-	1 - 1 - 1 - 0100   10100   111 - 1
Pneumonia.	
Pleurisy.	
Meningitis.	1111111111111
Heart disease.	1: 12 1-33 11-1113 1-1111
Gastritis and peritonitis.	
Convuls ons.	
Bronchitis,	
Apoplexia Bright's disease	
Total local diseases.	0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 -
agaces in feed fetor	
Phthisic pulmonalis.	80년 : SESTENDE - FREE - SESTENDE - FREE - SESTENDE - FREE - SESTENDE - FREE -
Cancer.	<del></del>
eases.	
Total constitutional dis-	
Whooping cough.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Typhoid fever.	
Tonsilitis.	0.1 1.0 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1
Puerperal tever. Scarlet fever	
Measles	
Malarial tevers.	
Dysentery.	
Diarrhæal diseases.	
Спојета тогрия,	
Cere bro-spinal meningitis.	
Сросета інтаптити.	
Croup and diplitheria.	
Total zymotic diseases.	
lotal under five years and, over one year,	
Total under one year.	2 - 1 - 1 - 1
Annual rate per 1,000.	2.7.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2
excinded.	
Total deaths, all canses, premature and still-births	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
75 7 (10 54,50) 1310(),	######################################
Population, census 1890.	7 607 9 983.1 7,691 6,395 6,395 8,25 8,25 8,25 8,25 9,75 9,74 9,74 9,74 9,74 9,74 9,74 9,74 9,74
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Cities of less than 10 000	recerring to the control of the cont
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	Alliance Bellaire Bellaire Befaire Galou Galou Galioui Graulipolis Greeuvile Martin's Ferry Middletown Norwalk Warten Washington C. H Washington C. H Wellsville Wooster
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF APRIL, 1893.

Premature and still-bitths	
Total violence.	157c-11 - 1   g-c-g   %
Total developmental dis-	10 m 이 및 및 로마 마이 마이 마이 프로 및 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pneumonia.	38-240 6-9 x 91   5
Plemisy	
Meningitis	H : # # # # : : : : : : : : : : : : : :
Heart disease	# 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1
Gestriffs and peritonitis	1284 - 1 1 - 1 1 - 1 1 - 1 1 1 1 1 1 1 1 1
Remobilis s.	
Bri ht's cisease	
Apoulex18.	05 24 -       - 21 21     1 - 2 -     1 41
Total legal diseases	12xx
sitanoming sisidid	4-08-2-50
Cancer,	-029        -24  -  -1
Total constitutional dis-	-898255555555555555555555555555555555555
Миоорінg сонді	-
Typhoid iever.	10 10 10 10 10 10 10 10 10 10 10 10 10 1
Scariet tever	
Pherperal lever.	
Measl s	1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Dysentery. Malarial tevers.	
Distributed d seases.	
Chor ra morbus.	- 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Carebr e inglinening tis	
Croup and dahth rin.	-1- 21-8- 1- 1- 1- 18- 14
Total zymotic diseases.	$\infty \pi \omega \text{ is } \frac{3}{4} \pi \alpha + \omega \text{ sin } \pm \omega + \alpha + \overline{\omega} \propto \omega \text{ is } \frac{\omega}{\pi}$
total uncer five years and	01-25 5 2 2 C - 20 1 4 - 1
Total and rone year.	2000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Annual rate per 1,000.	5 - 8 - 8 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
Total deaths all consessing tremsture and still-births excluded,	8 4 5 전 중 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1
Population, census 1890.	2
Cities of 10, 00 inhabitants (cens.18 1890), or over,	Akron Conton Conton Conton Clevel and Colect and Colect and Colembus Columbus Columbus Bast Liverp of Fortion

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF APRIL, 1893.

Premature and still births.	
Totai violence	
eases,	- 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Cotal developmental dis-	
Рпециония	_ 23
pl- urisy.	
Meniugitis.	
Heart disease.	
Gastritis and p-ritonitis	1117171717111111111
Convulsions	:- : : : : : : : : : : : : : : : :
Broachitis.	1 1 21 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Bright's disease	
Apoplexia.	[L
Total local direases.	\$ 1000 000 000 000 000 000 000 000 000 0
Phthisis pulmonalis.	20 31 3 - 31 21
Сапсет	<del></del>
SƏSEƏ	HAHHH : [5/0]5/04 (0 (0 (0) 12
. otal constitutional dis-	
Мароринд с идр.	
Typho d rever	19-11-11-10
stitlisuol.	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Puerperal lever	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Malatiai 1ever	:::::::::::::::::::::::::::::::::::::::
Dysenitey.	
Diarrheal disease.	ee
Cholera morbus	
cerebro-spinal mennigitis.	
Си тета литаптиш.	
Croup and diphtheria.	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total symotic diseases.	E 3 20 21 21 21 22 E 2 E 2 E 2 E 2 E 2 E 2 E 2
lotal under five years and over one year.	
T. tal under one year.	2 2 1
Annual rate per 1,000.	<ul><li>では4点では4次1年3~20年4月68~30円</li><li>に発売なける2年2月88年8月4日6835円</li><li>2年2月8日8日8日8日8日8日8日8日8日8日8日8日8日8日8日8日8日8日8日</li></ul>
o al deaths all causes, premature and still-births excluded.	05x2-00x2-0x67-2562xx2-2x0
	8 <u>01163168888689888888888</u> 8
Population census 1890.	7,607 6,944 7,141
Cities of Icss than 10,000 inhabitants.	Alliance Bellaire French III French II French III Frenc

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MAY, 1883.

Premature and still-births.	1 18 20 2 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total violence.	65-814 20-1 2 -214- S
Total d velopmental dis-	28200 U   6070   E
Pneumonia.	# 15722001-0-0   WEST   E
Pleurisy	1110000 111111 111111111111111111111111
Meningitis	
Heart in Frase	
Castrit sand peritonitis.	PERMIT IN FIRST PARTICE
on isluvno)	01- ×2-
Bronchitis	THE HELPHHAM ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! ! !
Bright's disease.	51 x II-
Apoplexia	프 : 이글우 : 그 : [ 한 1 년 : 1 ] [ ]
Total local diseases	50x895000xxxxxxxxxxx
Phthisis pulmonalis.	1000 5 5 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Сяпсет	- 1983-9 i i- i i 18
sasta	2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
Total constitutional dis-	[ *1
Whoeping convit	11157171111111111
lyphoid lever	1:1227   1:17   1:17   1:16
l'onsilitis.	
Scarlet fever.	-::-:::::::::::::::::::::::::::::::::::
Phermera I ver.	
7[6.17]67	φ 2
M datia lever-	20 1 1 1 2 1 1 1 1 2 1 2 1 2 1 2 1 2
Dysenti: v.	9
	9
Dr trhead diseases,	
· holera morbus	
Cerebro spinal meningitis.	
, no era infantum.	
Croup and diphtheria	88
Total zymotic diseases	
Total under hve years and over one year.	4 8 12 1 10 1 10 12 1 2 1 1 1 1 1 1 1 1 1 1
Total under one year.	2 - 2 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2
Annual rate per 1,000.	25
Total deaths, and causes, premature and still-births excluded	왕국명론구등학부업학교등등교육당왕 [년
1,100 1010	=======================================
Population, census 189 .	25,000 26
Cities of 10,000 inhabitants census of 1890) of over.	A' ron . Canton . Canton . Calculus . Cleveland . Columbus . Columbus . Ironton . Nawa Kel . Nawa K

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF MAY, 1893.

Premature and still-births.	
Total violence	
598:9	21 00 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total developmental dis-	H2 ::H-::21:::21::::15
Pneumonia	L N
Picurisy	
Meningitis	
Heart disease,	저 [이하고 [이어 리그리 [구 ] [ 10 ] ] [ [ 12
Ga-tritis and p ritourtis.	17 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :
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Brouchitis	
Apoplexia. Bright'- d-se se	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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Total local diseases	
ethenoming sisinful	H-00-4-000 00 01-00-01- 14
Cancer	
eases.	
Total constitutional dis-	: : : : : : : : : : : : : : : : : : : :
Whooping cough	7
Typhoid fever	
-indianoT	
Scarlet ferer	
Measles Puer eral fever,	
Malarial fevers.	
Value allery	111111111111111111111111111111111111111
Diarrhœal dr-eases.	
Cholera m rous.	
Cerebro-spinal meningitis.	
Cholera infantum.	
Cr. np and diphtheria	[2] [1] [1] [4] [4] [4] [7] [7] [9] [9] [9] [9] [9] [9] [9] [9] [9] [9
Total zymotic diseases.	
Total under five years and over one year	28 - 7 - 1 2 2 4 - 1   2
Total under one year.	4
	21445876988888888848 o
Annual rate per 1,000.	524882435185445 61444584785888888888888888888888888888888
premature and stilbirths excluded.	8217856 82 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Total deaths, all canses,	
	97,607 93,607 93,41 93,41 93,41 93,607 93,60
Population, census 1890.	7. 607 9.934 9.934 7.74 7.74 7.74 7.74 7.74 9.030 9.03
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Citics of less than 10,000 i	ree
9	Alliance Bellaire Freicy IIe Freicy IIe Freicy III Fostoria Fostor
	Alliance Bellaire Circlet Ile Fremont Fostoria Gallipolis Grancaster Marion Muddet wn Muddet wn Urbana Urbana Washington C IL Washington C IL Weslavile Wooster Totals
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JUNE, 1893.

Premature and still-births.	#   #   #
Total violence.	1 184 La 1 1 1 1 - 1 1 1 2 1 2 2 1 2 2 1 2 2 2 2
Total developmental dis-	0-0247 -   waster East   71
Pneumonia.	## 0 m   g
Pleurisy.	1 - 1 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Meningitis.	a istant in in- in-nest 8
Heart disease,	교교문장소급교교 i ion imon impose l ở
Gastritis and peritonitis.	w in x w =     -
Convulsions,	[8]
Bronchitis,	[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [
Apoplexia,	- 154 : 1   12   1   10 - 100   1   2
Total local diseases.	630 T2 T T T T T T T T T T T T T T T T T T
Phthisis pulmonalis	828222 0-024- 6 829 B
Сапсет.	9
Coral constitutional dis-	0945554 c-945 c-786 8
Whooping cough. Total constitutional dis-	
Typhoid tever	- 10 2 3 - 1 1 1 - 1 1 3 1 - 1 2
sintisno?	
Scarlet fever.	11   2 22 2   1   -   1   -   1   1   1   2
Pueri-eral fever	
Meastes.	100011111111111111111111111111111111111
Malarial fevers.	34 54 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Diarthæal diseases Dysentery.	: 17 : : 17 : : : : : : : : : : : : : :
Cholera morbus.	1 1 - 12, 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Cerebro-spinal meningritis	
Cholera infantum.	24 : : : : : : : : : : : : : : : : : : :
Croup and diphtheria.	1 12 1 1 1 - 2 1 1 1 2 2 7 1 1 8
Total zymotic diseases.	227 S 22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Total under five years and over one year.	2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Total under one year,	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Annual rate per 1,000.	2.5.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2
Total deaths, all causes, premature and still-births excluded, d,	27 (01) 10,283 11,28
	5%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
Population, census 1890.	22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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Cities of 10,000 inhabitan or over,	cothe
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	Akron Chalboothe Chalboothe Cle cland Cle cland Cle cland Coambins Bayton East Liverpool Linna Mansfeld Mansfeld Fortsmouth Fortsmouth Sprin feld Yoffin Yoffin Coambinsky Sprin feld Yoffin Coambinsky Sprin feld Yoffin Coambinsky Sprin feld Toffals

\* Cholera morbus and Cholera infantum, 24.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JUNE, 1893.

Premature and still-births.	
Total violence.	하기 : : : : : : : : : : : : : : : : : : :
Total developmental dis-	33 T T 19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pneumonia.	
Pleurisy.	
Meningitis.	
Gastritis and per tonitis. Heart disease.	· · · · · · · · · · · · · · · · · · ·
Convulsions,	1111-1111-111
Bronchitis.	
Bright's disease.	:::::::::::::::::::::::::::::::::::::::
Apoplexia,	-10   01 to   01 to -10 -10 to   1-01 to   01   1-11   1
Total local diseases,	
Phthisis pulmonalis	
eases, Cancer,	-0;   -0   -0   0;   0   0   0   0   0   0   0   0
Total constitutional dis-	
Whooping cough.	
Typhoid fever	-
Scarlet fever. Tonsiliti	
Puerperal fever.	
Measles.	
Malarial fevers.	
Diarrhæal diseases. Dysentery.	
Cholera morbus.	
Cerebro-spinal meningitis	
Cholera infantum.	
Croup and diphtheria,	9,000 io i i i i i i i i i i i i i i i i i
Total z motic diseases.	[0] [1] [1] [1] [1] [1] [1] [1] [1] [1] [1
Total under five years and	
Total under one year.	
Anunal rate per 1,000.	28.80 28.80 29.80 20
Total deaths all causes premature and still-births excluded.	84000000000000000000000000000000000000
	7,507 7,169 7,141 7,
Population, census 1890.	
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Cities of less than 10,000	ree  one one one one one one one one one
	Alliance Bellaire Premont Fremont Fostoria Gallipolis Grallipolis Grenville Martion Martion Martion Middletown Mt. Vernon Mt. Vernon Mt. Vernon Worwalk Troy Urbana Warten Washington C. H. Washington C. H. Welisville Wooster Totals.
	NO WWW WWW WWW WWW WWW WWW WWW WWW WWW W

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF JULY, 1893.

Premature and still-births.	10   18   2   1
Total violence, .	2 2 2
Total developmental dis-	1118 2 x 2 21  4-2 x 10 2 x 20   5
Pneu monia.	25 2
Pleurisy.	
Mennugitis.	
Heart disease.	
Convulsions. Gastritis and peritonitis.	01
Bronchitis	<u> </u>
Bright's d sease	2 :
Apopiexia.	#   000   H
Total local diseases.	STARTE START
Phthisis pulmonalis.	800152460 u-a- 001500 K
Cancer,	다 [부리하는
Cases.	
Whooping cough	1 0100 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Typhoid ever,	:: 01 00 00 00 1: 01 :: 1 -: 1 × 1
Tousilitis.	
Scarlet fever.	N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Puerperal fever.	
Measles.	1 1 - 2 1 1 1 7 1 1 1 1 1 1 - 1 1 1 2
Malarial fevers.	111-21-1111111-11
Dysentery.	:cI+ : : : : : : : : : : : : : : : : : : :
Diarrhæal diseases	
Cholera morbus.	1 1 1 2 1 3 1 1 1 - 1 1 - 1 1 1 1 1 1 1 1 1 1 1
Cerebro-spinal meningitis	:: -=====::::::::::::::::::::::::::::::
Cholera infantum	e = 7 * e = + + + + + + + + + + + + + + + + + +
Croup and diphtheria	00 100 10 10 10 11 11 10 11 12 11 11
Total zymotic diseases.	
Total under five years and over one year.	000 ECOUL 12 2 2 Zec 0.1
Total under one year.	11 21 22 28 6 6 12 12 12 12 18 18 18 18 18 18 18 18 18 18 18 18 18
Annual rate per 1,000.	######################################
Total d aths, all causes, premature and still births excluded.	8325355223 x 774575742778 83.
Population, census 189),	25 26 28 28 28 28 28 28 28 28 28 28 28 28 28
Cities of 10,000 inhabitants (census 1890), or over.	Akron Cauton Cauton Challicothe Challicothe Cheveland Columbus Dayton Ead Liverpool Findlay Nausheld Nausheld Nausheld Tiffun Tiffun Tiffun Sorningfield Tiffun Totals Totals

\*Cleveland cholera morbus and cholera infantum, 153.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO DURING MONTH OF JULY, 1893.

Premature and still-births.	
Total violenc.	
Total developmental dis-	7 7 7 7 7 7 7 7
Pneumonia	
Prentisy.	
Meningitis	
Heart disease.	19 18 11 12 18 18 18 18 18 18 18 18
Gastritis and peritonitis.	1 1 1 1 1 7 1 1 1 1 7 1 1 1 1 1 1 1 1 1
Bronchitis Convulsions,	-::::::::::::::::::::::::::::::::::::::
Bright's disease	7-11-11-11-11-11-11-11-11-11-11-11-11-11
Apoplexia.	1 1 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Total local diseases.	4-0000-00-00-00-00-00-00 4 ×
Ph'hisis pulmonalis	21 0 3 11 0 41 41 8
Саптет.	
Total constitutiona, dis-	99 0 38 38 B
Whooping cough.	<del> </del>
Typhoid fever.	
Tonsilitis.	
Scarlet tever.	1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pheto tal fevet.	
Measles.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
M "arial fevers.	: : : : : : : : : : : : : : : : : : :
Dysentery.	
Diatri cal diseases.	
Cholera mor us.	H :   H
Cholera intentum.	391 81 1-535- 1-6 1 1 8
Croup and diphtheria.	H H N   M   H   H   W
Total zymotic diseases.	400-xH WF042H000H 01401 2
Total under five years and over one year.	H=00 00 124 124 1201 100 100 100 100 100 100 100 100 10
Total under one year.	9151 to 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Annual rate per 1,000.	5. 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Total deaths, all causes, premature and still-births excluded.	0.000000000000000000000000000000000000
Population, census 1890.	7,007 9,084 9,084 7,109 7,109 4,408 8,277 7,555 9,556 9,009 9,00 9 9,00 9 9,00 9 9,00 9 9,00 9 9 9 9
Cities of less than 10,0(0 inhabitants	Alliance Deflaire Deflaire Deflaire Deflaire Fostoria Galipolis Greenville Lancaster Marcius Ferry. Marcius Ferry. Middleown. Middleown. Totals Warren Warren Warren Trbana Warren Warren Washington C. H. Washington C. H.

TABSTRACTS OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF AUGUST, 1893.

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Premature and still-births.	
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Total developmental dis-	
Pneumonîa.	_ 915000
Pieurisy.	
Mennightis	-     M - ore       - : :   -
Heart disease.	
Convulsions. Gastrilis and peritonitis	
Stron Bron Britis	
Bright's disease.	il.es is : : : : : : : : : : : : : : : : : :
Apoplexia.	10mm
Total local diseases.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Phthisis pulmonalis.	E 2007
Сапсет	Na 17520 1114 114 111 1194 118
total constitution and the table	12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Whooping cough.	- x = 01
Typhoid fever	11128-111-1-111211
'You stilits.	
Scarlet lever.	
Measles.	
M sarial lever.	0    -01-
Dys, niety.	11-2-2-11:1-1:0:1-1:1:0:1\%
Diarthead diseases	229 :
Cerebre spinal meningitis.	n x =
Cholera infantum	記る:0 = - 25 x   1:1   - 21 x io     花型 x   近
Croup and diphtheria.	
Total symotic diseases.	222 22 22 22 22 22 22 22 22 22 22 22 22
over one year.	
Total under five years and	[
Total under one year.	55 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Annual rate per 1,000.	72 58 58 58 58 58 58 58 58 58 58 58 58 58
excluded.	
To at deaths, all caus s, premature and still-birth-	2
	28 1 28 1 2 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
Population, census 1890.	PBL
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cit es of 0,000 inhabitants or over.	Akton Conton Conton Continuo Circultud Cleveland Cool, and
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Cholera morbus and cholera infantum, 179. Failed to report.

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7	Total violence.	1
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٥	Total developmental dis-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
WORDST,	Pneumonia.	
3	Pleurisv.	
	Meningitis.	21 10 10 10 10 10 10 10 10 10 10 10 10 10
5	Heart disease.	H
	Ga-tritis and peritonitis	
HOME	Convu sions.	[N
3	Bronchitis.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Br ght's disease.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
- 1	Apoplexia.	
DORING	Total local diseases.	010 30 10 14 10 14 10 10 10 10 10 10 10 10 10 10 10 10 10
2		
?  i	Phthisis pulmonalis.	
- 1	Caucer.	
2	-səseə	
CELC,	Total constitutional dis-	
۱	Whooping cough.	
5	Typhoid tever.	
- 1	Tonsilitis,	
C111E3	Scarlet lever.	
- 1	Puerperal fever.	O
ا ز	Measles.	°
اد	Malarial fevers.	
3	Dysentery.	
3	Diarrhœal diseases.	
3	Cholera morbus.	
LOTTONING	Cerebro-spinal meningitis.	: : : : : : : : : : : : : : : : : : :
4	Cholera infantum.	4- 10- 1 10 1 1- 1 1 19 1 1 10 10 144 10 1 1 1 1 1
	Croup and diphtheria.	# : : : : : : : : : : : : : : : : : : :
THE	Total zymotic diseases.	67 1 20 6 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
- 1	over one year,	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
3	Total under five years and	
ů	Total under one year.	401 501 100 101 1 1 1 1 1 1 1 1 1 1 1 1 1
CACORO		
۲ ا	Annual rate per 1,000.	8.456 8.456 17.79
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ا ځ	excluded.	171 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
HEIK	Total deaths, all causes, premature and still-births	
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		7.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
AND	Population, census 1890.	1 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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DEATHS		
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R	Cities of less than 10,000 inhabitants.	nce
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF SEPTEMBER, 1893.

Premature and still-births.	
Total violence.	44 27 4 4 201-14 01 010000 12
Total developmenta, dis-	Saught a 2 1-92 27-6- 2
Pueumonia.	4 × - 8 1 - 1 × - 1 × 61 · 3
Plenrisy.	
Heart disease. Meningitis.	· : [라프(************************************
Gastritis and peritonitis.	: col- : : : : : : : : : : : : : : : : : : :
Convulsions,	
Bright's d sease Bronchitis	- 1 - 51m (a) : 1 - 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1
Apopiexia.	[ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [ [
Total local diseases.	511.088.588.800 A + 1.800 888 6 1.80 PF 18
Phthisis pulmonalis.	1001-101-101-101-101-101-101-101-101-10
Сапсет.	600128235   600100000   602100   31
Total constitutional dis-	
Typhoid ever.	
Tousilitis.	
Puerperal fever. Scarlet fever,	- ITN7
Measles.	
Dysentery. Malarial fevers.	01
Diarrhand diseases	
Cholera morbus,	
Cholera infantum Cerebro-spinal menngitis	0100 174 017 1 TOOL 10 10 10 10 10 10 10 10 10 10 10 10 10
Croup and diphtheria	21 12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Total zymotic diseases.	40 x 7 7 7 2 2 - 4 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
Total under five years and over one year.	4 8 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Total under one year.	11 12 13 13 15 17 17 18 18 18 18 18 18 18 18 18 18 18 18 18
Annual rate per 1,000.	X45555554 X4255514 S X X X X X X X X X X X X X X X X X X
Fotal deaths, all causes, premature and still births excluded.	表質に発送された。 2822年20日 2822年202年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年202年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年202年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年202年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年20日 2822年202年202年202年202年202年202年202年202年202
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Pneumonia.	
Plenrisy.	
Meningitis.	
Heart disease.	
Gastritis and peritonitis.	
Convulsions.	
Bright's disease Bronchitis.	
Apoplexia.	H 21 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total local diseases.	00-01 :- 000 : 0   T-000   T-0000- :   T   E
Phthisis pulmonalis.	
Cancer.	1   -   -
Total constitut.onal dis- eases.	
Whooping cough.	
Typhoid fevi r.	
Tonsilitis.	
Scarlet fever	
Measles Pherperal lever.	
Malarial tevers,	
Dysentery.	111111111111111111111111111111111111111
Diatrhæal diseases,	
Cholera morbus.	
Choleta intantum. Cere bro-spinal meningitis.	70-11-1011111111111
Croup and diphtheria.	111-12111111111111111111111111111111111
Total zymotic diseases.	4 x x   x - 4 x x     1   1   1   2   2   2   2   2   2
over one year.	0101-111011-121121120-41112
Fotal under five years and	
Total under one year.	800 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	1   2   2   2   2   2   2   2   2   2
Annual rate per 1,000.	7.17.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.
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Total deaths, all causes, premature and still-births	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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Population, census 1890.	
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITHES OF OHIO, DURING MONTH OF OCTOBER 1893.

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1 otal violence	# [취임(# F
Potal deve opmental d s-	9 010 7 0 7 0 7 0 7 0 7 0 0 7 0 0 0 0 0 0
Pneumonia.	·
Henrisy	-
Meningi is	
Heart elsease.	$\frac{1}{2} \frac{1}{2} \frac{1}$
Gastrilis and periton its.	9   [26-9   -
Bronchitis	11129
Bright's disease.	
yb b exis	1 2 × -
Total local diseases	유무하였습니다 [사이어드라드어그리 [이글루크] [발
Phthisis pulmonavis.	
1 one v	11-22-1111
eases.	그
Whooping cough	
l'uphoid tever.	
Tousillis	
Searlet 16 ver.	(
Puerpi ral tever.	
Acaste	
signal feinefuld	
Dysentery	
Chow ra morbus, Diarrhee I diseases.	
Cerebro spinal meningi is	
Cho-era miantum	TT   TO TO
Croup and diplitheria.	2135×31- 2   120   120   120
Total zymotic diseases	xau3xx2au1=-94a14
Your une er five years, and over one year,	7 "5-28"   17   11   2"   2
Total under one year.	5130. 62 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Annual rate per 1,000.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
fotal deaths, all causes, premature and still- births excluded.	왕왕군현충송동 x c 원호 x = = = = = = = = = = = = = = = = = =
Population, census 1890.	다 하는
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Cholera morbus and cholera i Hantum, 22.

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Premature and still-births.	
Total violence	1111171111111111111111111
Total developmental dis- eases.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Pneumonia.	
Pleurisy	
Meningitis	
Heart disease.	
Gastritis and p ritonitis.	
onvulsions.	
Bronchitis	
Apoplexis. Bright's d:se-se.	124   1   1   2   1   1   1   1   1   1   1
	400 10400 10 10 10 10 10 10 10 00 0 0 0
Total local disea-es.	
rhthisis pulmonalis.	
enses. Cancer	
Total constitutional dis-	7
Whoop ng cough	
Lyphoid fever	[  -  -
Tousilitie	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Scarlet fever.	
Puerperal fever.	0
Measles	
Malarial fevers.	1-12 11 11 11 11 11 11 11 11 11 11 11 11 1
Dys niery	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Diarrhœal di>eases.	
Сројета триз.	
Cerebro-spinal meningitis.	
Cholera infantum.	84
Croup and diphtheria	<u></u>
Total zymotic diseases.	
Total under five years and over one year.	- n n n n n n n n n n n n n n n n n n n
Total under one year.	
Annual rate per 1,000.	7 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5
Total deaths, all causes. premature and stili-births excluded.	110 1120xxxx4 d 6400ccxaccetxrrrd 8
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Population, census 1890.	200 200 200 200 200 200 200 200 200 200
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Cities of less than 10,000 inhabitants	Ce C
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ABSTRACT OF THE REPORTS OF DHATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF NOVEMBER, 1893,

Premature and still-births.	7 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -
Total violence.	
69869	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
Total developmental dis-	
Pneumonia.	2012880
Pleurisy.	1 1 1 2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1
Meningitis.	
Heart disease.	101 x 5 x 101 101 101 101 101 101 101 101 101 1
Gastritis and peritonitis.	-
Convulsions.	- 이 [1~ 항 - 10 ] ] [ [ - [이 - ] - + ] [1~ 이 ] [ ]
Brouchitis	1: :#200::01::::01:::=0:::
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Apoplexia.	- 1-x3- : : : : : : : : : : : : : : : : : : :
Total local diseases.	3622286x 00000000 00000 8
Phthisis pulmonalis.	46498864 14 1844 19534 15
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Сяпсет	
Total constitutional dis-	2022-
Wh w ping con, h	
12 ph aid lever	12:72%
Tousilitis.	1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Scarlet fever.	
Mea-les.	
Malarial fevers.	
Dysentrey,	- : : : N : : : - : : : : : : : : : : :
Di trhœal diseases.	11 2-11 11 11 11 11 12
holera morbus	2 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
ho era infantum. Cerebro spinal meningitis.	[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
Croup and diphtheria	6 6 8 5 x 1 1 1 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1
Total zymotic diseases.	912 81282
Total under five years and over one year.	19 2 7 7 7 19
Total under on: /ear.	2 1 2 2 1 1 2 2 1 1 1 1 1 1 1 1 1 1 1 1
Annual ra e per 1,000,	6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
exclude	
Total deaths all causes remarks and still-births	%8744874 xx47x2347488
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Population, census 1893,	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	33-25x0-22-22-22-2x22 [6]
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ies	Al ron Canton Canton Canton Civilicotic Civilicotic Cicveiand Cicveian Cicv
Cities of 10,000 inhabitants of over.	Al ron Caution Caution City is licothe City and it Cleveland Cleveland Cleveland Cleveland Cleveland Cleveland Cleveland Cleveland Call and it Cleveland Call and it Cleveland Marsilon Newark Marsilon Newark Springfeld Sandusky Steubeuville Toledo Younget wn Toledo Younget wn Zanesville
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\* Failed to report. La Grippe: Cincinnati, 6; Massillon, 2; Newark, 3; Toledo, 1; Zanesville, 1.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO DURING MONTH OF NOVEMBER, 1893.

Heart disease. Meningitis Preurisy. Preumonia	
Ap pl xis Bright's disease Bronchit's Courulatous. Caucultis and peritonitis.	
Ph hisis pulmonalis Total local diseases.	
Typhoid tever. Whooping congh. Total constitutional dis- eases. Caucer.	
Measles. Poeth ral fever. Scarlet lever. Tonsilitis.	
Cholers mor ne.  Diart of ld seases.  Dysantery.  Mainal tevers.	
Total zymot, c diseases. Croup and diphth-ria. Cholera ni nium.	20.20
Total under live years and	
Annual rate per 1,000 Total under one year.	558 25644 1 57.521.18528.6544 2 58.65544 2 59.6554 2 59.
Total deaths, all causes, premature and still-birth	× 7 4 6 6 2 5 1 1 1 2 1 1 2 1 2 1 2 1 2 1 2 1 2 1
Population, census 1890.	2.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Cities of less than 10,000 inhabitants	Alliance Bellaue Bellaue Bellaue Bellaue Defance Defance Defance Fremout Galipolis Galipolis Galipolis Galipolis Galidoun Mardin Ferry Madelewn Mardin Ferry Middlewn Mardin Cround Mardin Cround Mardin Cround Mardin Cround Mardin Cround Warten Norwalk Frry Warten Warten Washington C. H. Warten Washington C. H. Warten Washington C. H. Worl V Ile Wooster Wooster Wooster Skonia

\*Failed to report.

Fail d to report. D aths from La Grippe: Akron 6, Canton 3 Chillicothe 2, Cinc mati 57, Columbus 10 Dayton 5, Massallon 3, Newark 6, Springfield 3, Toledo 12, Noungstown 6, Zanesville, 1.

ABSTRACT OF REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF DECEMBER, 1893.

Premature and still-births	2012 15 20 10 11 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1
Potal violence,	
To al developmental dis-	1 7 1
Pueumpuia.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Menngriis	1 = 2 × 0 × 0           + 0 + 0
Heart di-ease	
situotrad bus sitratsal)	le en
Convulsio s.	
Bronchitis.	[8877] [7] [7] [7] [7] [7] [7]
Apoplexia. Bri ht's disease	- 1 = 7   100     -
Total local diseases	
Phthisis pulmonalis	아이 [포함함부구   [무워크 ] 아무워드 [ 구인이 ] _
Cancer.	1   411-0  -  -
Potal constitutional dis-	20 - 12 - 12 - 12 - 12 - 12 - 12 - 12 -
Whooping congh.	1119711-1111111111111111
Typhoid ever.	
Seat et lever	
Puerper (1 tever.	
Measl s	
Dyscut, 1y. Malarial 6 vers.	
soseas (manuaten)	
Cuo ram rbus	
Cho era infantum.	
Croup and do hth ris.	
Folal av mo'ie diseases.	x=x=16881-+ h-2000-200- 1080-   분
over one year.	2 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 1
Cotal und rone year.	다음하물원귉길마는 (ene le e le San 급
An nalrate per 1,000.	Researched
remature and still-births  - xcluded.	#####################################
Total deaths all c uses	
Population, census 1890.	25   25   25   25   25   25   25   25
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Cities of 10 (00 inhabitant	Akron (auton (cauton (cauton (cintinothe (cintinothe (columba) (co
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ABSTRACT OF REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING MONTH OF DECEMBER, 1893.

Premature and still-births.	
Total violence	
ea-es.	2100 61 41 4 7 7 80 1 1
Pneumonia. Fotal cevelopmental dis-	47-4 4 514 16 404-41 1004 1100
Meningitis.	
Heart disease.	
Gastritis and peritonitis.	0
Convulsions.	
Bright's disease Bronchitis.	
Apoplexia.	
Total local diseases.	454 481-0804 1- 01201-8804011-1-41
Phthisis pulmonalis.	(C) (C) (T) (C) (C) (C) (C) (C) (C) (C) (C) (C) (C
Cancet	[m   1   1   m   1   1   1   1   m   m
eases	x-0   044   14   5   0   14-14-   1   0   14-1
otal constitutional dis-	21
Who pring cough.	24   1   1   1   1   1   1   1   1   1
Tonsilitis.	
Scarlet fever.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Puerperal fever	
Measles,	
Dy sentery.	
Diatrhæal diseases.	1111-11111111-11111
Cholera morbu-	
Chatera int ntum	
Croup and diplitheria.	<u> </u>
Total zym tic diseases.	20-4 12-20202020101 4-40 202020-1-2-0 10
total under five years and over one year.	3 3-43   1 3-3   1 3-3   3
To tal under one year.	01 20 01:0 01-01
	8 8025582128282768 0 2008258 015
Annual rate per 1,000.	12   12   13   14   15   15   15   15   15   15   15
premature and still-births excluded.	250 64773640 2 22555244 2 2 2 2 2 2 2 2 2 2 2 2 2 2
loial deaths all causes,	: ::
19497 Unguyaa Waranyada	0.000 0.000
Population, census 1890.	ြောင္းကို မြဲသက္သိုင္တိုင္တိုင္တိုင္တိုင္တိုင္တိုင္တိုင္တ
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\*Failed to report. Deaths from La Grippe: Fremont I, Greenville I, Marion 4, Salem 2, Troy I

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING CITIES OF OHIO, DURING THE YEAR 1893.

Premature and still-births.	24 25 25 25 25 25 25 25 25 25 25 25 25 25	727
Total violence.	8	18
Total developmental dis-	568 88 84 84 84 84 84 84 84 84 84 84 84 84	1,674 95
Pneumonia.	+446882111 121111111 1 1 1 1 1 1 1 1 1 1 1 1	1.812
Pleurisy.	-	1 55
Meningitis.	maging 888744844	
Seesib fresH	<u> </u>	1,100 609
Gastritis and peritonitis	7, 15 8 2 2 1 1 1 1 1 1 2 1 2 1 2 1 2 1 2 1 2	323
Centulsions.	00000 Tanananananatay 900000	1 53
Brouchitis.	9:12521   12   12   17   18   18   18   18   18   18   18	8
Bright's disease.		55 668
Apont-xia.	<u> </u>	S
		6:
Total local discases.	6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8,942
Pullisis pulmonalis.	4025-1935-1538-1538-15388	2,006
Cancer.	74 - 12 5 5 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1	517
Total constitutional dis- eases.	84.44[5888 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	3,125,517
Whooping congh	-5500-4 P - 12 COS-	90
Typhoid tever	454 E E E E E E E E E E E E E E E E E E	3
stiffietto T	11100 11011 1111	=
Scarlet lev r.	1, 2, 5, 5, 4, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	77
Puer peral fever	1,1-0 [v ]-	9,
Measles.	: : :의 :- :구 : :의 : : := : :의(:)	5
M larial levers	2 128522 - e 10 15e-1 6 10 272 - 21   12   12   2   127-	7:
Dysentery.		Ξ
Distribæal diseases.	1-53.50 - 3-0 0 8cm	121
cholera morbar		==
Cerebro-spinal meningitis.		35
Cholera infantum	88-0*28 we wan x x 32x	552
Croup and diphtheria.	424,828,644,000,000,000,000,000,000	790
Total zymotic diseases.	- 12 + 2 kg 8 - 2 8 8 7 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	3,945
Total under five years and over one year.	48.16.89.89.88.31.13.14.18.88.88.88.88.88.88.88.88.88.88.88.88.	2 086
Total under one year.	중교원로립립립트리스로의 의원 IX 를립표	4,219
Annual rate per l 000,	\$255555448555555555555555555555555555555	17.62
Total deaths, all causes.	# \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	18,900
Population, census 1890,		
Ciries of 10,000 follabilants (census 1897), or over:		Totals

Ocholera infantum and cholera morbus, 490.
Reports re eived from Canton for 9 months; East Liverpool, II; Findlay, 6; Hamilton, 2; Lima, 10; Massillon, 5; Steubenville, 4; Tiffin, II.

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Premature and still-births.	64   Hannadhan   64   179   1875   1880   18	121
Total violence.	20 CH	1 1 1 2 1
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To al developmental dis-	27x-00000 0 0000x 00 00 22000 0	1 7
Pneumonia.	54	=
Pleurisy.		65
Menn gifts.	1/21   1/2/10   1/2   1/3/2   1/2/2   1/2   1/2	15
Heart disease	The source of th	
Gastritis and er tonitis		TE:
Convulsions,	sive continue fill to feet on fill to the feet of	
Branchitis.		1 01
Apoplexia. Bright's dis a.e.	<u> </u>	18
T tal local diseases.	### ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹ ₹	S17
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Page S	19   19   19   19   19   19   19   19	9 71 12
Who oping cough.		1 1- 3
		13
Tayal bioldyT	:::::::::::::::::::::::::::::::::::::::	20127 6 103
Scarlet tever. Fonsilitis.		15
Puer end fevir.		
Me: sie		T (2)
Malan fevers.	1:-12:11:1: 5:14:1: 11:1: 9:4:-1	31
Dysentery.	70111-01-01-01-0	븒
Cholera morbus	[0] 12 [1] [1] [1] [1] [1] [1] [1] [1] [1] [1]	15
Cerebro-spins menngitis	n : : : <u> </u>	1 20 1
Choleta intantum.	Brewes Buen - secretary - E-ra -	12
Croup and diphtheria.	en e	1352
Total z motic d seases.	22-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	151
OVET ONE VERT	100 - 100 -	268 188 6
Total under one years and Total under five years and	<u> </u>	897
		1 1
Annual rate per 1,000.		15.78
Total deaths all causes premature and still-births excluded.	- 1223333482122434	2,168 15.7
Population, census 1890.		
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Cities of Jess than 10,000 in	Alliance Belaire Bucyrus Circleville Defauce Defauvare Fremout Fostoria Galupolis Greteville Arricula Arricula Mariella	Totals
S.	rice re	Tot
<u>iž</u>	Bucyrus Bucyrus Bucyrus Bucyrus Bucyrus Belavar Defauce Defauce Galipol Greenvil Arietal Arietal Martin Martin Martin Washin Washin Wellstoi Wellsvil Wellsvil	
9	NWWWWW TEAST OF THE STATE OF TH	1

"NO F ports received - Reports received from fingyths for 4 main is Circlevill -s, Denance 3, Dela 10, Mt. Vernon S, Norwalk 9, Piqua 11, Pomeroy 5, Troy 6, Wellston 11, Wellsville 8, Wooster 9, Neura 2,

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Premature and still-births.	
eases. Total violence.	
total developmental dis-	
Pue umonia.	100-110-110-110-110-110-110-110-110-110
Pleurisy.	
Heart disease Memmgriis.	
Gastrit's and peritonitis.	
SHO.SIRAHO)	
Bright's disease Brouchitis	
Apoplexia	
Total local diseases.	
Phthisis pulmonalis.	
Cancer	
Fotal constitutional dis-	
Whooming could	
Typhoid lever.	
Scarlet lever.	
Ридретай темет.	
//essles.	
bysentery.	
Diarrheal diseases,	
Cerebro-spinal meningitis, Choler morbus.	
Cholera infantum.	
Croup and diphtherra.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total zymotic diseases.	2,     2,1 -
Total under five years and over one year	
Total under one year.	- 152 150 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Аппиаї таїє рет 1,000.	1256287818151748181751818181818181818181818181818181818
Fotal deaths, all can es, premature and still-births excluded.	# - 9 # 4 - # 4 # 9 # 9 # 9 # 9 # 9 # 9 # 9 # 9 # 9
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Population census 1890.	ล่ ชายสาที่สำหรับขาย พิสศาสัต ล้าสาทสาที่สาทา
Villages.	Areadia Areadia Ashley Barley Barley Citon Ilam Co. Citon

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF JANUARY, 1893

Premature and still-births.		,
Total violence.		7
Total developmental diseases		<u>9</u> _
Pneumonia.		<u></u>
Fleurisy.		<del></del>
Meningitis		
Heart disease.		<u> </u>
Gastritis and 1 eritonitis.		<del>3</del> , —
Brouchitis Convulsions.		2
Bright's disease.		<u>-</u>
Apoplexia,		<u>-</u>
Total local diseases		911
Phthisis pulmonada.	N :::::::::::::::::::::::::::::::::::	3
Сапсет,	[-	-
eases.	OHER : : : : : : : : : : : : : : : : : : :	S.
Total constitutional dis-		
Whooping c ugh		51
Typhoid lever.		-
Tonsilitis.		
Scarlet fever.		<u>.</u>
Puerperal lever.		~
Measles.		9
Malarial fevers		<u> </u>
Dyseutery.		<u> </u>
Diarrhœal duseases.		<u> </u>
Choieta motbus.		0
Cerebro-spinal meningitis.		0
Cholera infantum.		3
Croup and diphtheria.		<sup>રે</sup> વે
Total zymotic diseases.		69
over one year.		21
Total under five years and		21
Total under one year.	H : : - : : : : : - : - : - : - : : : :	77
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	888888888888888888888888888888888888888	SS.
Annual rate per 1,000.	8	2
excluded.		22
premature and still-births		233
Total deaths, all causes,		
	1080 1080	137,856
Population, census 1890.	8144 449843444444 8844444444948   1   801449981490146982149440810348955	2,
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	Marysville  McComb  McCombelsville  Methanicsburg  Mathersburg  Mathersburg  Mathersburg  Mathersburg  Mathersburg  Mathersburg  Mathersburg  Mayoleon  New Lisbon  New Lisbon  New Straitsville  North Amherst,  North Amhers	Totals
	your fell find the fell find t	
	A E E E E E E E E E E E E E E E E E E E	

The following villages report no deaths for January: Ada, Belle Center, Caledonia, Dunkirk, Hubbard, St. Paris, Smithville, Spencerville and Union City.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF FEB., 1893.

Premature and still-births.	
Total violence.	
Total developmental dis- eases.	**-
Pneumonia.	1 6 8 1 1
Pleurisy	
Mennigitis.	
Heart disease.	
Convulsions, Gastritis and peritonitis,	
Brouchitis.	
Bright's disea e.	
Apoplexia.	
Total local diseases.	
Phthisis pulmonalis	3 3 3 3-5
Сапсет.	
Total constitutional dis- eases,	61 31 51 61 - 51     -   -   -     1   -   61 51
n.poopin: congh.	
Typhoid fever	
Scarlet fever. Tonsilitis	
Puerperal fever.	
Meas es.	
Malatial fevers.	
Diatrheal diseases.  Dysentery	
Сројега потрия.	
Cerebro-spinal meningitis.	
· roup and diphtheria. Cholera infantum.	
Total zymotic diseases.	
over one year,	
Total under one year. Total under five years and	1:0:11111111111111111111111111111111111
	######################################
Annual rate per 1,000.	83821-298228828888888825559997+36e85
Total deaths, all causes, premature and still-births excluded,	
Population, census 1890.	100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Olivit a service and facilities	
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Villages.	
N. C.	een
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	Marie Paris Carlos Carl
	Manual Ma
	Amelia Arcanum Ashley. Ashley. Ashley. Athens Athens Athona Alberne Belle Center Belle Conter Bloomingburg Bloomingburg Corledonia Corthage Cordedonia Corthage Cortes Cordedonia Corthage Corthage Content C
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF FEBRUARY, 1893.

Distribucial diseases.  Dysentery  Messles  Messles  Puerperal fever.  Typhoid	9 1 1 5
Distribucial diseases.  Distribucial diseases.  Distribucial levers.  Distribucial levers.  Distribucial levers.  Distribucial levers.  Scarlet (evers.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Distribucian diseases.  Distribucian distribucian diseases.  Distribucian distribucian distribucian diseases.  Distribucian	31 4 24 95 9 6 7 6 6 20 2 2 2 15
Distribucial diseases.  Distribucial diseases.  Distribucial devert  Distribucial devert  Distribucial devert  Total constitutional diseases.  Total constitutional diseases.  Distribucial devert  Total constitutional diseases.  Distribucial diseases.	31 1 24 91 9 1 7 6 629 2 2 2 1
Distribucal diseases.  Dysentery  Metalial levers  Metalia levers  Purperal levers  Purperal levers  Tonal diseases  Tonal constitutional diseases  Passes,  Purperal levers  Typhold fever  Typhold fever  Typhold fever  Typhold fever  Typhold fever  Philitis  Cancer  Apoplexia  Bright's diseases  Convulsions  Convulsions  Convulsions  Disconsitis  Heart diseases  Convulsions  Convulsions  Convulsions  Typhologics  Typhologics  Typhologics  Typhologics  Philiss  Philiss  Convulsions  Total diseases	31 1 24 91 9 1 7 6 629 2 2 2 1
Distriboxal diseases.  Dysembers  Measles  Measles  Dysembers  Measles  Dysembers  Dysembers  Dysembers  Distributional fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Distributional diseases.  Cancer.  Apoplexia  Bright's diseases.  Distributional distributional diseases.  Distributional distributional distributional diseases.  Distributional distributi	31 1 24 93 9 6 7 6 6 99 2
Distriboxal diseases.  Dysanlety  Malarial levets  Masales  Puerperal levets  Tonal devet.  Typhoid fevet.  Caucer.  Apoplexia  Bright's disease.  Tonal local disease.  Tonal local disease.  Typhoic in the pulmonalis.  Typhoid fevet.  Caucer.  Apoplexia  Bright's disease.  Tonal local disease.  Tonal local disease.  The local diseas	31 1 24 9 5 7 6 6 6 9 2
Distribuxal diseases.   Dysanlery	31 24 97 9 6 7 6 6 29
Distribucial diseases.  Dysentery  Measles  Genter (ever  Tonalities.	31 1 24 95 9 6 7 6 65
Distribucial diseases.  Distribucial diseases.  Distribucial dever.  Distribucial dever.  Tonalitis.  Distribucianial diseases.	31 4 24 95 9 6 7 6
Distribucial diseases.  Dysentery  Metals lever.  Metals  Metals  Dysentery  Metals  Puriperal lever.  Tonallitis.  Difficult diseases.  Tonal local diseases.  Difficult diseases.  Dif	31 1 24 95 9 6 7
Distribucial diseases.   Dysentery	31 4 24 95 9
Distribucial diseases.  Distribucial diseases.  Distribucial dever.  Distribucial dever.  Distribucial dever.  Tonsilitis.  Typhold dever.  Tonsilitis.  Typhold dever.  Tonsilitis.  Distribucial diseases.	31 1 24 95
Distribucal diseases.     Dysentery   Measies   Dysentery     Measies   Measies   Dysenters     Tomailitie.   Typhoid fever.     Total constitutional diseases   Cancer.     Cancer.   Cancer.   Cancer.   Cancer.     Cancer.   Cancer.   Cancer.   Cancer.     Cancer.   Cancer.   Cancer.   Cancer.     Cancer.   Cancer.   Cancer.   Cancer.   Cancer.     Cancer.   Cance	=
Distriboal diseases.  Dysembers  Malarial levers  Malarial levers  Mondifies  Tonalities	<del></del>
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Distriboal diseases.  Dysembers  Malarial levers  Measles  Dosniet fever  Tonalities.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.  Typhoid fever.	:::::
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Diarrhoad diseases.   Dysenlety   Dysenl	9
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Diarrhoad diseases.   Dysenlety	::::=
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Constant and Constant Cholera morbus	: : :   :
Choleta infautm.	
Croup and diphtheria	: :- [2]
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Total under five years and Over one year.	· -   8
Total under one year.	A
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Total deaths, all ceauses, premature and still-births excluded excluded	194
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Marysville.  Nacchan esburg.  Mit Gital Nechan esburg.  Mit Gital Net Manhers. New Loulon North Authers. North	Woodsfield

The following villages report no deaths for February: Fluore, Fairport, Frankfort, Glendale, Hudson, McComb, Napoleon, New Lisbon and Summerfield.

33.	Premature and still births.	
1893.	l'otal violence	
Ħ.	Total developmental dis-	O 7101
MARCH.	Pneumonia.	HH-10 20 21 1 1 21 21 1 1 21 1 1 1 1 1 1 1
MA		
	Plenrisy.	
OF	Heart cisease. Meningi is.	
MONTH	Gastritis and periton tis.	
N.C	Convulsions.	
N	Bronchitis.	
5	Bright's disease.	
RIP	Ap p exia	- nogen - noge
DURING	Total local diseases	
	Phthisis pulmonalis.	
01110,	Cancer	
ō	eases.	
01.	- total constitutional dis-	
	Typhoid fever.	
F.S.	Tousilitis.	
NG.	Scarlet 1ever.	
VILLAGES	Puerperal fever.	
5	Measies.	
0	Malarial levers	
1.	Diarrhucal diseases. Dysentery.	
6	Cholera morbus.	
1.	Cerebro-spinal meningitis.	
FOLLOWING	Cholera infantum	
	Croup and diphtheria.	
THE	Total zymotic diseases	
IN	Total under five years and	
CAUSIES	Total under one year.	
US		#44446969894444484848 82996848644294
	Annual rate per 1,000.	719287272676767276728747
THEIR	premature and still- births excluded.	20020000000000000000000000000000000000
Ē	total deaths, all can-es,	
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AND	Population, census 1890.	outside aue dispondantere e segentario
DEATHS		
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3.	Vilhages	
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF MARCH, 1893.

Premature and still-births.	
Total violence.	Uiiiiiiiiiiiiiiiiiiiiiiii
Total developmental dis-	n n n n n n
Pneumonia.	
Pleurisy.	
Meningitis.	11111-111-1-11-0
Heart disease	1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :
Convulsions. Gastritis and perstonitis.	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
Bronchitis.	11111711111111111111
Bright's disease.	
Apoplexia,	0-01-000000 :400 :0100 : :001 : :
Total local diseases.	
Phthisis pulmonthis	
Cancer.	######################################
Total constitutional dis-	
Whooping cough.	
Tophoid lever.	
Scarlet tever.	
Puerperal fever.	21
Malarial fevers. Measles.	:::::::::::::::::::::::::::::::::::::::
Dysentery.	
Diarrhæal diseases.	
Cholera morbus.	
Cholera intantum. Cerebro-spinal meningitis	<del></del>
Croup and diphtheria.	::::::::::::::::::::::::::::::::::::::
Total z. motic diseases.	
Total under five years and over one year.	10 10 10 10 10 10 10 10 10 10 10 10 10 1
Total under one year.	
Annual rate per 1,000.	20.21 20.21
premature and still-births excluded,	파트대파파요요요= ※ 파리다 ※이프트리키리파   61
Total deaths all canses	
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Population, census 1890.	01-01-44-4 00001-4-4-4-0000   12
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Villages	
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	New Lisbon New London New Straitsville North Amherst North Amherst North Amberst North Amberst North Amberst North Pales Rowenna Reading Reading Riverside Abina Riverside Abina Riverside Apina Riverside Apina Riverside Apina Riverside North Charleston Propeano City Versalites Wadsworth Wilmington Wyoming
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The following villages report no deaths for March: Archbold, Ashley, Cridersville, Cumberland. Fairport, Germantown, Glenda'e, Kalida, McComb, Mechanicsburg, Smithville, Summerfield, Union City and Winton Place.

Premature and still-births. ABSTRACT OF REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF APRIL, 1893. Total developmental dis-Pueumonia, Pleurisy Mentingitis Heart disease. Gastrius and peritonitis Convulsions Bronchitis. Bri. lit's disease. Apoplexia. Total local diseases. Phthisis pulmonalis, Cancer. səsvə Total constitutional dis Whooping cough. Typhoid fever. **smillismoT** SCATICL TEVET Puerperal fever. Malarial tevers. Dysentery. Diarrhoeal diseases. Cnolera morbus. Cerebro-spinal meningitis Cholera infantum. Croup and diphtheria Total aymotic diseases. Total under five years and over one year, Total under one year. 3.195 3.195 3.195 3.195 3.195 3.195 3.195 3.195 3.195 Annual rate per 1,000, Total deaths, all causes, premature and still-births excluded. Population, census 1890. orain ..... Crestline Doylestown Arcanum Forest Blanchester..... Fairport Harbor, Bloomingburg... Elmwood Place Glendale..... Hicksville..... Bellefontaine Germantown Carth : ge ..... IIndson ..... Coshocton Conneant. Frankfort Avondale Dunkirk. Kent ..... Leeton a. Amelia.

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Premature and still-births	
Total violence	
eases.	
Total developmental dis-	
Pneumonia	
Plenrisy.	
Meningitis	11111171171717171717171717171717
Heart disease.	
Convulsions. Gastritis and peritonitis	: : : : : : : : : : : : : : : : : : :
Bronchitis,	
Bright's disease.	
Apoplexia.	
Total local diseases.	100 010001-000 01- 10101- 101 TO 100
Phthisis pulmonalis.	
Сапсет,	
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Total constitutional dis-	
Whooping cough.	
Tonsilitis. Typhoid sever.	
Scarlet lever.	111111111111111111111111111111111111111
Puerperal fever.	
Measles	
Malarial fevers	
Dysentery.	
Cholera morbus Diarrhœal diseases.	
Cerebro-spinal meningitis	
Cholera intantum.	
Croup and diphtheria.	
Total zymotic diseases	
Total under five years and over one year.	
Total under one year.	**************************************
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Annual rate per 1,000.	4 [12] 4 [2] 4 [3] 4 [4]
premature and still-birtl	- abenabaceaeeepparantantaneeenaene
Total deaths, all causes,	:
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Population, census 1890.	ನಡೆದೆದರೆಗೆನೆಗೆನಗೆಕಾರಗಳನ್ನು ನಡೆಕ್ಕರ   ರಲ್ಲಿಸನೇಕನ್  ಆ
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The following villages report no deaths for April: Ashley, Chiton Cridcisville, Cumi ville, Pleasant H.II, Prospect, Sabina, Somerset, Versailles, West Liberty and Woodsheld.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLACES OF OHIO, DURING MONTH OF MAY, 1893.

Premature and still-births.	
Total violence.	111111111111111111111111111111111111111
Total developmental diseases	
Риентоп:а.	
Pleurisy.	
Meningitis	
Heart disease.	
Convulsions.	
Bronchitis	
Bright's disease.	
Apoptexia.	
Total local diseases	
Phthisis pulmona, is.	
Cancer.	-
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fota, constitutional dis-	
Дуроория соцей Турнога течет	
Tousilitis,	
Scarlet lever.	
Pherperal fever.	
Measles.	
Dysculery.	
Diarrheal diseases.	
Cho.era morbus.	
Cerebro-spinal meningitis.	
Croup and diphtherra.	
Total aymotic diseases.	
over one year.	
Total under five years and	
Total under one year.	
	######################################
Annual rate per 1,000.	はの世界の対象数数数数数数数数数数数数量数数数数数数数数数数数数数数数数数数数数数数数数
Total deaths, all causes, premature and still-births excluded.	000000000000000000000000000000000000000
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Population, census 1890,	
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Villages.	
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Premature and still-births.	
eases 'l'otal violence.	
Total developmental dis-	
Pneunionia	
Pleurisy	
Meningitis.	
Heart disease.	1 1 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Gastrius and peritonitis.	
Convilsions,	
Bronchitis	21
Bright's d sease	
Apoptexia.	
Total local diseases.	120 00480000
Phthisis pulmonalis.	- n
Cancer,	[m ·   [N ]   [ 0   ]   [ 1   ]   [ 1   ]   [ 2
eases.	
Total constitutional dis-	
М поэрти в соп в п	* : . : : : : : : : : : : : : : : : : :
T/ phoid ←ver.	
Tonsilitis.	
Scarlet fever.	
Fuerperal fever.	
Measles,	:::::::::::::::::::::::::::::::::::::::
Malatial fevers.	
Dyscutery.	0
Cholera morous.	
Cerebro-spinal meningitis	
Cholera infantum	
Croup and diphtheria	7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Total zymotic diseases.	2 1 1 1 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2
Total under five years and over one year.	
Total under one year.	2- 1 1 1 2 2
Annual rate per 1,000.	100
lotal daths, all causes, premature and still births excluded.	21.82.7.83.7.8.9.1.0.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1
	8 98388798887988888
Population, census 1899.	2.00
Vidages.	New Lisbon New Lisbon New Lisbon North Amberst North Amberst Norwood Oberlin Persyle Persyle Persyle Persyle Ravenna Red ng Red ng Rivers acc Sidney Somerset Somerset Somerset Somerset Watery With a place Winton Place Winton Place Winton Place Winton Place Woming

The following villages report no deaths for June: Arcanum Chifton (Hamilton Co.), Cridersville, Delt., Hopedale, Hubbard, Marysville MeConnelsville, Murray City, Oxford, Ridgeway, Tippecanoe and Versailles.

Premature and still-births.	
Total violence,	
l'otal developmental dis-	
Pneumonia.	
Pleurisy.	
Meningitis.	
Heart disease.	
Convulsions. Gastritis and peritonitis.	
Bronchitis.	
Bright's disea-e.	
Apoplexia.	
Total local diseases.	246 2010 20
Phthisis pulmonalis	
Сапсет.	
Total constitutional dis- eases.	
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Typhoid tever	
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Scarlet fever.	
79791 fever	
Maiarial fevers.	
Dysentery	
Diarrheal diseases	
Cholera morbus.	
Cerebro spinal meningriis.	
Choleta infantum.	
roun and diphtheria.	
Total zymotic diseases.	
Total under five years and over one year.	
Total under one year,	
Annual rate per 1,000	Tetetx82162765152565 22883 22855221251 5265288 28852885 288528852885288528852885
excluded.	01-01-01-02-01-01-01-01-01-01-01-01-01-01-01-01-01-
Total death ail causes, premature and still-births	
	188 21 17 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Population, consus 1890	Signification of the second of
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RRTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF	l	-
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er	Premature and still-births.	
1893.	Total violence.	
	eases.	
HZ	Total developmental dis-	
JUNE,	Pneumonia.	<u> </u>
	Plenrisv.	\$
OF	Mennagids.	<u> </u>
H	Heart disease.	4
Z	Ga-tritis and peritonitis.	
Month	Bronchitis.	
	Bright's disease.	
DURING	Apoplexia.	
U.K.	Tetal local diseases.	-
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	Phthisis pulmonalis.	[
Онто,	Сапсет.	<u> </u>
0	total constitutional dis-	
OF	N hooping cough. Total constitutional dis-	
	Typhoid lever.	1,450 1,920
VILLAGES	.ronsilitis.	
Y.A.C	Scarlet lever.	
- 13	Fuerpeial fever.	<u> </u>
	Malarial fevers,	<u> </u>
Q l	Oy-entery.	<del></del>
N CI	Distribusal diseases.	E 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
رِّ	Спојета тогрив.	F
17	Cerebro-spinal meningitis.	
FOLLOWING	Сполета интаптини.	
	Croup and diphtheria.	
THE	Total zymotic diseases.	
ZI	Total under hve years and over one year.	Table   1   1   1   1   1   1   1   1   1
SES	fotal under one year.	<u>                                     </u>
CAUSES	Annual rate per 1,000	#8674 x 87558 x 6473 x 6473 x 6474 x 6474 x 6474 x 6474 x 6475 x
	000 [ 254 5452 [ 511114 ]	<u> </u>
THEIR	excluded.	
HE	Total deaths, all causes. premature and still-births	
Ħ		200   100
AND	Population, census 1890.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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DEATHS		
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF JULY, 1893.

Premature and still-births.	
Total violence	
eases.	
Total developmental dis-	
Pneumonia sinomnam9	
Bremesy	
Meningros	
Gastriffis as d p ritonalis.	
sucisinano	
Bronchitis	
Bright's d se se	
Apoplexia.	
Total loss this factor	- 1,0 to 1 1 - 1 1 v or 1 to 0.
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Cancer Cancer	
Total constitutional dis-	
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Vea-les Puett etal fever,	
Maiarial fevers.	
DAS III GLA	
is a rhead diseases.	
Cholera m rbus.	
Cerebro-spinal meningitis	
Cholera infantum.	
Cr up and diphtheria	
Potal zymotic diseases.	-
over one year	
Total under five years and	
Total under one year.	
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Annust rate per 1,000.	
excluded.	
Total deaths, all causes premature and stilb.rths	
Population, census 1890.	
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING THEIMONTH OF JULY, 1893.

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Premature and still-births.	
Total violence.	
eases.	
To al developmental dis-	
Pheumonia.	
Meningitis. Pleurisy.	
Heart di-ea e	
Gastritis and peritonitis.	
Convid-ions.	
Bronchitis,	
Bright's disease.	
Total local diseases. Apo: lexia.	
Pathinisis pulmonalis,	- : : : : : : : : : : : : : : : : : : :
Сапсет,	
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Total constitutional dis-	
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Pue: netal tever.	
Measles.	
M darral fevers.	
Dysentery	
Distriteeal diseases.	
Сholera morbus	
Cerebro-spinal meningitis.	
Cholera infantum	
Croup and diphtheria.	
Total zymotic diseases.	-
Over one year.	
Total under five years and	
Total under one year.	
Annual rate per 1 000.	x = 4 = 4 = 4 = 4 = 4 = 4 = 4 = 4 = 4 =
Total deaths, all causes.	31-53 E31-E3
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Population, census 1890.	ಮಿಕಿಕ್ಕ   ಈ ಕಿಟ್ರಾಣ ಜಾಕಿಕ್ಕರ ಕೆಕ್ಕರ ಬೆಯಮಕ್ಕೆ
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552	- 9	176,	1 007	2,069	00 00 00	3,079	De 2	3,000 3 12:00		151.9 5 238 18.79	
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552	- 9	176,	1 007	2,069	00 00 00	3,079	De 2	3,000 3 12:00		151.9 5 238 18.79	
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552	- 9	176,	1 007	2,069	00 00 00	3,079	De 2	3,000 3 12:00		151.9 5 238 18.79	
552	- 9	176,	1 007	2,069	00 00 00	3,079	De 2	3,000 3 12:00		151.9 5 238 18.79	
552	- 9	176,	1 007	2,069	00 00 00	3,079	De 2	3,000 3 12:00		151.9 5 238 18.79	
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The following villages report no deaths for July: Ashley, Belmont, Blake's Mills, Copley, Cumberland, Elida, Gilboa, Hudson, McArthur, Napoleon Perrysville, Richmond, Ridgeway, Somerset, Troy and Cuion City.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VII. LAGES OF OHIO, DURING MONTH OF AUGUST 1893.

Premature and still-births.	
Total violence.	- : :-* : : : : - : : : : : : : : : : :
Sassa	
Total developmental dis-	
Pneumonia.	[7]
Pleurisy.	<u> </u>
Meningitis	
Heart disease.	
Castritys and peritonitis.	
Convulsions,	
Bronchitis	
Bright's disease.	
Apoplexia,	
Total local diseases.	
Phthisis pulmonalis.	
silvaolalia sividida	
Сапсет	
eases.	
When ping cough Total constitutional dis-	
Typhoid fever	
Tousilitie.	
Scarlet fever.	
Puerpera, fever,	
Mea-les.	
Malaria: fevers.	
Dysentery.	
Di trhæai disea-es,	
hotera morbus	
Cerebro spinal meningitis.	<u></u>
ho era infantum.	
Croup and diphtheria.	
Total zymotic diseases.	
Total under hive years and over one year.	
Total under one year.	10-1 - 21 21   21-
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Annual rate per 1,000.	- 19% 25 15 9 2 6 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
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Total deaths, all causes, premature and still-births	N 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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Population, census 1893.	
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ABSTRACT OF REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF AUGUST, 1898.

Premature and still-births.		18
Total violence.	1 1 2 1	55
Fotal developmental dis-	1	38
Pneumonia.		য
-yeimpfq		:
Meningitis.		ec
Heart disease.	[C1 : ] ] [	16
Gastritts and peritonitis.		9
Convulsions.		0.0
Bronchitis.		17
Bright's disease		
Total local diseases. Apoplexia.		55
Phthisis pulmonalis.		
Cancer Phthisis pulmonalis		10 27
Sesses		
total constitutional dis-		9
Whooping cough.		-
Typhoid fever.	;- ; ; ;- ;	12
Tousilitis.		1
Scarlet fever,	:::::::::	7
Puerperal fever		-
Measles.	: : : : : : : :	1
Malarial fevers.		C1
Dysentery.		0
Diarrhæal diseases.		31
Сројета тогрия.		-
Cerebro-spinal meningitis.		9
Cholera infantum.		9
Croup and diphtheria.	_ : : :: : : : : : : : : : : : : : : :	12
Total zymotic diseases.		88
Total under five years and over one year.		56
Total under one year.	51-1	릭
Annual rate per 1,000.	63.83 22.97 51.13 23.19 14.20 15.58 7.50 16.50	21.02
excluded.	010000000000000000000000000000000000000	259
Total deaths all causes, premature and still-births		Ĝ1
Population, census 1890.	376 1,567 2,069 2,069 3,079 1,600 1,454	147,795
111 villages.	Warsaw	Totals.

The following villages report no deaths for August: Antwerp, Crestline. Danville, Delta. East Springfiel!, Blida, Forest, Gahanna, Hanging Rock, Montpelier, Mt. Gilead, Murray City, New Straitsville, Patterson, Richmond, Ridgeway, Smithville and West Liberty.

ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO DURING MONTH OF SEPTEMBER, 1893.

Premature and still-births.	
Total violence.	
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Total developmental dis-	
Pnemmenia	
Prentisy.	
Heart disease.	
Gastritis and peritonitis.	
Convulsions.	
Brouchits	
Apoplexia. Bright's disease	
Total local diseases.	
Phthisis pulmonalis.	
Сапсет.	
care constitutional dis-	
Thooping cough.	
Typhoid fever.	
Tourstiffis,	
P erp ral fever. Scarlet fever.	
Measles.	
Molarial tevers.	
Diarre cel diseases. Dysentery.	
Cholera mor us.	
cerebro-spinal meningitis.	
Cholera intantum.	
Total zymotic diseases. Croup and diphtheria.	01 : 10 10 1 : 01 : 01 : 0 : 0 : 0 : 0 : 0 : 0 : 0
over one year.	
Total under five years and	
Total under one year.	
Annual rate per 1,000.	28258445832   6848258354243   685222 28758445842   68482585411845465   685222
excluded.	######################################
Total deaths, all causes.	
Population, census 1890,	68 ± 98 ± 68 ± 88 ± 88 ± 81 ± 81 ± 8 ± 8 ± 8 ± 8 ±
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF SEPTEMBER, 1893.

Premature and still-births.	· · · · · · · · · · · · · · · · · · ·
Total violence.	Φ
total developmental dis-	
Pnemmonia.	
Pleurisy.	
Menngitis.	
Gastritis and peritonitis. Heart disease	
Convulsions	
Bronchitis.	
Bright's disease.	
Apoplexia	
Total local diseases.	
Phthisis pulmonalis,	
Сапсет.	
Total constitutional diseases	
Whooning cough.	
Typhoid fever.	
Tonsilitis,	
Puerperal lever. Scarlet fever.	
Measles,	
Malarial fevers.	
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Diatrhœal di-eases.	
Cholery morbins,	
Cholera infantum. Cerebro-spinal meningitis.	-: -: : : : : : : : : : : : : : : : : :
Croup and diphtheria.	
Total zymotic diseases.	w 's se -
over one year	
Total under five years and	
Total under one year.	
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Annual rate per 1,000.	148 ET 2 8 8 7 5 2 8 5 2
excluded,	<u> </u>
Total deaths, all cau-es, premature and still-births	
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Population, census 1890.	
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3.108	16 ,969 283 19.01 35 36 102

The following villages report no deaths for September: Cridersville, East Springfield, Blida, Fairport Harbor, Forest, Germantown, Garrettsville, Glendale, Hopedale, Habbard, McConnelsville, Mt. Galead, Murray City, Patterson, Port Washington, Port William, Prospect, Richmond, Sabina, Somerset, Summerfield, Sycamore, Warsaw, Waynesfield, and West Liberty.

Premature and still-births.	
T tal violence.	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1
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Total developmental dis-	
Pneumonia.	T
Pleurisy.	
Meningitis.	
Heart disease.	Tilliee ille illee le lie ille
Gastritis and peritonitis.	
Convulsions.	
Bronchitis.	
Bright's disease.	- : : : - : : : : : : : : : : : : : : :
A poplexia.	
Total local diseases.	
Phthisis pulmonalis.	
Сапсет.	
eases.	
Total constitutional dis-	
Whooping cough.	
Typhoid tever.	
Tonsilitis.	
Scarlet fever.	
Puerperal tever.	
Measles	
Malarial tevers.	
Dysentery.	
Diarrhoal diseases.	
Cholera morbus.	
Cerebro-spinal meningitis.	
Cholera intantum.	
Croup and diphtheria.	
Total zymotic diseases.	-
over one year.	
Fotal under five years and	
Total under one year.	
Annual rate per 1,000.	55.55
excluded.	
premature and still-births	gasaacacacacacacacacacacacacacacacacacac
Total deaths, all causes,	:
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Population, census 1890.	a Headan Harring drawing appropriate
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF OCTOBER, 1893.

Premature and still-births.	15
foral violence.	101:1:1:1:1
Total developmental dis-	15
Pneumonia.	9
Pleurisy.	::::::::::
Meningitis.	: : : : : : : : : : : : : : : : : : : :
Heart disease.	::-::::::::::::::::::::::::::::::::::::
Castritis and peritonitis.	:::::= 2
Convulsions.	: : : : : : I e
Bronchitis.	::::::15
Bright's disease.	: : - : :   ω
Apoplexia,	: : - :   2
Total local diseases.	86
Phthisis pulmonalis.	2   2
Cancer.	:::::=
eases.	원 일
Total constitutional dis-	
Whooping congh.	
Typhoid fever	:::::7::18
Tonsnitus.	
Scarlet lever.	
Puerperal ever.	
Measles.	1 1 1 1 1 1 1 1 1
M iarial tever.	
Dysentery.	1 1 1 1 1 1 7
Diarrheal diseases.	
Cholera morbus.	
Cholera infantum Cerebro-spinal meningitis.	- : - : : : :   ~
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Croup and diphtheria.	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
over one year. Total symotic diseases.	<u>:</u>
Total under five years and	: : : : :
Total under one year.	61
Annual rate per 1,000.	8 66 95.74 28 99 10.00 19.48 16 50
Total deaths, all causes, premature and still-births excluded.	155 2 2 2 1 2 2 2 1 2 2 2 2 2 2 2 2 2 2
Population, census 1890.	1,385 376 2,069 1,00 3,079 1,493 163,493
ill villages.	Versailles

The following villages report no deaths for October: Adelphi, Ashley, Bast Springfield, Blida, Germantown, Gilboa, Jeffersonville, Linwood, McClure McConnelsville, Mt. Gilead, Morristown, Mutray City, Patterson, Richmond, Smithville, Thornville, Washingtonville, Winton Piace.

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VILLAGES OF OHIO, DURING	Phthisis pulmonalis	
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FOLLOWING	Croup and dishtheria.	
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ABSTRACT OF THE REPORTS OF DEATHS AND THEIR CAUSES IN THE FOLLOWING VILLAGES OF OHIO, DURING MONTH OF NOVEMBER, 1893.

Premature and still-births.	
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Versailles	Wadsworth	Wellington	West Liberty	Wilmington	Winton Place	Wyoming		Totals

The following villages report no deaths for November - B anchester, Cridersville, Cumberland, Garrettsville, McClure, Melrose, Morristown, Mt. Gilead, Patterson, Richmond, Warsaw Washingtouwl e.

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1893,	Premature and still-births.	
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10	Total constitutional dis- eases	
Онто	Whooping cough.	
	Typhoid fever.	
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3.E.S	Puerperal fever. Scarlet fever.	
L'AC	Measles.	
H	Malarial fevers.	
>	Diatti (cal diseases.  Dysentery.	
ž	Cholera morbus.	
× ×	Cerebro-spinal meningitis.	
L.	Cholera infantum.	
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Deaths reported from Lacitippe (Chicago 1, Clyde 1 Deersville 1 Elyria I. Fairport 1, Oberlin 1, Port Washington 1, Sidney 1.
Willages reporting no deaths in December: Ada, Adelphi Gahanna, Mt. Gilead, New Straitsville, Perrysville, Somerset Summerfield, Thornville, Warsaw. Winton Place.

# SUMMARY OF MORTALITY REPORTS.

The total number of deaths reported from all causes—excluding premature and still-births—by the towns represented in the foregoing tables was 23,794. The average population of the cities and towns represented was 1,364,945, which is equal to an annual death rate of 17.43 per thousand living population represented.

The deaths in 1,265,070 living population in 1892 (November, 1891, to November, 1892) were 22,957, equal to an annual death rate of 18.14 per thousand; while in 1891 (November, 1890, to November, 1891), the total number of deaths reported in 1,244,800 population was 20.96, equal to a mortality rate of 16.88 per thousand.

The number of deaths reported each month was as follows:

January	July 2,263
February	
March	
April	October
May	November 1,934
June 1,723	December 2,411

The greatest number of deaths (2,411) was reported in December, the least number (1,723) in June.

#### DEATHS OF CHILDREN UNDER FIVE YEARS OF AGE.

The number of deaths reported of children under five years of age (premature and still-born excluded), was 7,298, which is equal to 30 per cent. of the deaths from all causes, and a death rate of 5.42 per thousand population represented. The death rate of children under five the preceding year was 5.68 per thousand population represented.

The deaths by months, of children under five, were as follows:

January	534	Tuly	973
February			
March	569	September	662
April	451	October	577
May	464	November	489
June	537	December	581

The greatest number of deaths reported in children under five (973) was in July; the least number (451) was in April.

#### ZYMOTIC DISEASES.

The total number of deaths reported from zymotic diseases was 5,240, which is equal to 22 per cent. of the deaths reported from all causes, and an annual rate of 3.84 per thousand of the population represented.

The number of deaths reported the preceding year from zymotic diseases was 4,929, equal to a death rate of 3.89 per thousand population represented.

The number of deaths reported from zymotic diseases each month was as follows:

January	297	July	719
March	305	August September	574
April	286	October	507
June	328	December	462

The month having the greatest number reported (805) was August; the one having the least (286) was April.

#### CROUP AND DIPHTHERIA.

The total number of deaths reported from croup and diphtheria was 1,129, which is equal to 4.7 per cent. of the deaths reported from all causes, and a death rate of .82 per thousand of the population represented.

The number of deaths reported the preceding year from these causes was 1,448, equal to a mortality rate of 1.14 per thousand of the population represented.

The number of deaths reported each month from croup and diphtheria was as follows:

Ianuary	113	July	57
February	107	August	57
March	81	September	84
		October	
May	81	November	157
June	71	December	121

The month having the greatest number reported (157) was November; the ones having the least number (57) were July and August.

# CHOLERA INFANTUM, CHOLERA MORBUS AND DIARRHOEA.

The total number of deaths reported from cholera infantum and diarrhœa was 1,053, which is equal to 4.42 per cent, of the deaths reported from all causes, and a mortality rate of .77 per thousand population represented.

The number of deaths reported the preceding year from these causes was 1,170, which is equal to a mortality rate of .93 per thousand of the population represented.

The deaths, as reported by months, were as follows:

January	23	July	281
February	20	August	279
March	16	September	171
April	•)•)	October	9.5
		November	
June	50	December	27

The month having the greatest number reported (281) was July; the one having the least (16) was March.

# MEASILES, SCARLET FEVER AND WHOOPING COUGH.

The total number of deaths reported from measles, scarlet fever and whooping cough was 425, which is equal to 1.78 per cent. of the total number of deaths reported from all causes, and a mortality rate of .31 per thousand of the population represented.

The total number of deaths reported from these diseases during the preceding year was 432, equal to a mortality rate of .34 per thousand population represented.

The deaths, as reported by months, were as follows:

January 26	July 33
	August
March44	September 34
April	October
May	November 26
June 46	December

The month in which the greatest number of deaths was reported (46) was June; the least number was reported in November.

# TYPHOID FEVER.

The total number of deaths reported from typhoid fever was 718, which is equal to 3.1 per cent. of the total number reported from all causes, and a mortality rate of .51 per thousand population represented.

The number of deaths reported from this cause the preceding year was 611, equal to a mortality rate of .48 per thousand living population represented.

The number of deaths from typhoid fever, as reported by months, was as follows:

January	33	July	37
February	42	August	75
March	49	September	96
		October	
May	50	November	68
		December	

The greatest number of deaths (122) was reported in October, least number (33) in January.

## CONSTITUTIONAL DISEASES.

The total number of deaths reported from constitutional diseases was 4,009, which is equal to 16 per cent. of the deaths reported from all

causes, and a mortality rate of 2.93 per thousand population represented.

The number of deaths reported from constitutional diseases the preceding year was 3,722, equal to a mortality rate of 2.81 per thousand population represented.

The number of deaths, as reported by months, was as follows:

January	321	July	335
February	322	August	319
March	380	September	299
		October	
		November	
		December	

The greatest number of deaths (380) was reported in March; the least number (299) was reported in September.

#### CANCER.

The total number of deaths reported from cancer was 694, which is equal to 2.9 per cent, of the deaths reported from all causes, and a mortality rate of .5 per thousand population represented.

The deaths, as reported by months, were as follows:

January 57	July 59	9
February 66	August 63	3
March 67		
April	October: 66	5
May:	November49	9
June 53	December 40	)

The months having the greatest number reported were March and September (67); the month having the least (43) was April.

## CONSUMPTION.

The total number of deaths reported from consumption was 2,648, which is equal to 11.13 per cent. of the deaths reported from all causes, and a mortality rate of 1.93 per thousand population represented.

The number of deaths reported from this cause the preceding year was 2,428, equal to a mortality rate of 1.81 per thousand population represented.

The number of deaths, as reported each month, was as follows:

January	. 214	July	230
February	. 207	August	175
March	. 257	September	174
March April May	. 257 . 256 . 230	August. September. October. November. December	174 228 221

The greatest number of deaths was reported in March (257); the least number (174) in September.

# LOCAL DISEASES.

The total number of deaths reported from local diseases was 10,861, which is equal to .49 per cent. of the deaths reported from all causes, and a mortality rate of 7.9 per thousand population represented.

The number of deaths reported from local diseases the preceding year was 10,178, equal to a mortality rate of 8.04 per thousand population represented.

The deaths, reported by months, were as follows:

January	1.034	July	815
		August	
March	1,097	September	709
		October	
May	850	November	945
June	749	December	1,260

The month having the greatest number of deaths reported (1,260) was December; the one having the least number (709) was September.

# BRONCHITIS, PLEURISY ANE PNEUMONIA.

The total number of deaths reported from bronchitis, pluerisy and pneumonia was 2,960, which is equal to 12.43 per cent. of the deaths reported from all causes, and a mortality rate of 2.16 per thousand of the population represented.

In the preceding year there were 3,083 deaths reported from these causes, equal to a mortality rate of 2.4 per thousand population represented.

The deaths, as reported by months, were as follows:

Jauuary	366	July	102
		August	
		September	
April	247	October	136
May	259	November	303
		December	

The month in which the greatest number of deaths was reported was December (545); the least number (78) was reported in August.

#### CONVULSIONS AND MENINGITIS.

The total number of deaths reported from convulsions and meningitis was 1,676, which is equal to 7 per cent. of the deaths reported from all causes, and a mortality rate of 1.22 per thousand population represented.

The number of deaths reported from these diseases the preceding year was 1604, equal to a mortality rate of 1.18 per thousand population represented.

The deaths, as reported by months, were as follows.

January	140	July	183
		August	
		September	
		October	
		November	
		December	
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The greatest number of deaths was reported in July (183); the least number (118) in August.

# DEVELOPMENTAL DISEASES.

The total number of deaths from developmental diseases reported (excluding premature and still-births) was 2,093, which is equal to 8.7 per cent. of the deaths reported from all causes, and a mortality rate of 1.53 per thousand population represented. During the preceding year there were 1,890 deaths reported from developmental diseases, equal to a mortality rate of 1.49 per thousand population represented.

The deaths, as reported by months, were as follows:

January	167	July	206
		August	
March			
April			
		November	
June			

The greatest number of deaths (217) was reported in December; the least number (146) in April.

## PREMATURE AND STILL-BIRTHS.

The total number of premature and still-births reported was 2,011, which is equal to 8.4 per cent. of the deaths reported from all causes, and a rate of 1.47 per thousand population represented.

During the preceding year there were 1,912 premature and still-births reported, equal to a rate of 1.51 per thousand population represented.

The premature and still-births, as reported by months, were as follows:

January 13	57 1	July	175
February 1:			
March 17	79	September	163
April 10	57	October	192
May 17	72	November	181
June 13	31	December	155

The greatest number (199) was reported in August; the least number (134) was in June.

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#### VIOLENCE.

The total number of deaths reported from violence was 1,233, which is equal to 5.18 per cent. of the deaths reported from all causes, and a mortality rate of .9 per thousand population represented.

During the preceding year there were 1,165 deaths reported from violence, equal to a mortality rate of .81 per thousand population represented.

The deaths, as reported by months, were as follows:

January 67	July 141
February 77	August 118
	September
April	October 107
	November 87
	December 104

The greatest number of deaths was reported in June (127), the least number (67) in January.

# List of

# Local Board and Health Officers.

JUNE 1, 1894.

# CITIES.

Akron	L. S. Ebright, M. D.
Alliance	P. W. Welker, M. D.
Bellaire	
Bucyrus	W. A. Daugherty, M. D.
Cauton	S. B. Post, M. D.
Chillicothe	
Cincinnati	J. W. Prendergast, M. D.
Circleville	. S. B. Evans.
Cleveland	
Columbus	D. N. Kinsman, M. D.
Dayton	
Defiance	
Delaware	W. B. Hedges, M. D.
East Liverpool	
Fremont	
Findlay	
Fostoria	J. O. Hess.
Galion	C. F. Eise.
Gallipolis	E. Westlake, M. D.
Greenville	
Hamilton	P. E. Welsh.
Ironton	.M. K. Moxley, Jr., M. D.
Kenton	J. W. Binkley, M. D.
Laneaster	
Lima	
Mansfield	, H. Craig, M. D.
Marietta	
Marion	M. R. Swisher.
Martin's Ferry	
Massillon	T. Clarke Miller, M. D.
Middletown	Geo. D. Lummis, M. D.
Mt. Vernou	
Newark	
Norwalk	
Piqua	Will J. Prince, M. D.
Pomerov	
Portsmouth	
Salem	
Sandusky	Elwood Stanley, M. D.
Steubenville	J. Buchanan, Clerk.
Springfield	

Tiffiu	J. Bridinger, M. D.
Toledo	J. T. Woods, M. D.
Troy	L. M. Wright, M. D.
Urbana	H. C. Houston, M. D.
Warren	M. L. Williams, M. D.
Washington, C. H	J. M. Edwards.
Wellston	J. B. Palmer,
Wellsville	Jos. T. Warren.
Wooster	J. W. Lehr, M. D.
Xenia	L. H Brundage, M. D.
Youngstown	H. E. Welsh, M. D
Zauesville	D. T. Sutton, M. D.

#### VILLAGES.

Aberdeen	T. Heaton, M. D.
Ada	W. H. Morrow.
Adamsville	S. J. Lane.
Adelphi	Geo. B. Rose.
Addystown	
Albany	
Alexandria	
Allentown	
Alvordtown	
Amanda	
Amelia	
Andover	
Annà	
Ansonia	H. A. Snorf, H. O.
Antwerp	
Apple Creek	
Arcadia	
Arcanum	
Archbold	•
Arlington	
Arlington Heights	
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Auburndale	
Avondale, Ham. Co	
Bainbridge	
Bairdstown.	
Baltimore	
Barryville	
Barberton	
Barnhill	
Barnesville	
Batavia	
Batesville	

Beach City	
Bealsville	
Beaver Dam.	
Bedford	
Bellbrook	
Belle Center	
Bellefoutaine	
Belleville	
Belpre	
Bellevuc	
Belmore	· ·
Belmout	
Benton Ridge	
Berea	
Berne	
Berlin Heights	
Bethel	W. W. Smith, M. D.
Bettsville	
Beverly	F. A. Pomeroy.
Blake's Mills	
Blanchester	
Bloomingbury	
Bloomdale	
Bloomfield	
Bloomville	
Bluffton	
Bolivar.	
Bond Hill	
Boston	
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Botkins	
Bourneville	S. S. Smith, M. D.
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Wyoming	
Yellow Springs	W. M. Haffner, M. D.
York	
Zanesfield	
Zaleski	E. M. Smallwood, M. D.
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### APPENDIX I.

Proceedings of a Meeting

OF THE

# State Board of Health

AND

Local Boards of Health of Ohio,

HELD IN

Columbus, Ohio, January 25th and 26th, 1894.



## Report of the Proceedings of the Meeting

OF

# State and Local Boards of Health,

HELD IN THE

Y. M. C. A. Building, Columbus, Ohio,

ON

January 25 and 26, 1894.

#### FIRST SESSION.

THURSDAY, 1:30 P. M., January 25, 1894.

The meeting was called to order by Prof. E. T. Nelson, President State Board of Health, who, on taking the chair, spoke as follows:

GENTLEMEN: The hour has arrived when we should open the discussions of this meeting. I perhaps have detained you a moment, but I have myself been detained at the bedside of a very sick father. I simply left long enough to come down and look into the deliberations, and probably will not be able to remain through the session.

I have very often, at times like this, felt grieved with the man who was the presiding officer taking upon himself to consume so much time, and for that reason, and that alone, I am gratified that I have the privilege of standing before you so that I can carry out my own views and make a short speech. I don't think it is proper for a man who presides over an audience when papers have been written with care by others who have been invited to take part in the proceedings, to take too much of the time himself.

I want to congratulate you, and thank you in the name of this science you all love so much, for your attendance and attention I know you will give the matters presented here. I look back in my own mind only a few years when some of us attempted, and with a good deal of difficulty, to organize a sanitary association. I remember very well of being at the first meeting, and we had at the opening not over a half dozen persons; and for several years our number did not, perhaps, exceed a score. But out of that, and out of the growth of the knowledge on this subject, there has come a revival of sanitary work in the State of Ohio. At the time referred to there were not over fifty local boards of health in the State, and many of these simply existed in name. They did not meet regularly, and they did very little if any work. To-day we have in the State of Ohio over fifteen hundred local boards of health, and many of them are very efficient. I think one may say

with perfect confidence that the very poorest board of health to-day is doing more than the best one did ten or eleven years ago, unless it would be in a few of the larger cities. We have something like five hundred and fifty boards of health to-day in cities, towns and villages. And taking those three words as our types, remembering that some of these villages have not been incorporated, remembering that some of them are very small, there are to-day only one hundred and five villages of any size or name in the State of Ohio where we do not find a board of health organized and ready for work. Then we have something like nine hundred township boards to-day, certainly a magnificent organization, and I feel sure that great work is going to be accomplished through the united action of these boards.

I regret, as much as any one can, the absence this afternoon of Dr. Probst, who has been called to Springfield on account of an outbreak, or a supposed outbreak, of smallpox there. I regret also very much the absence of Dr. Kinsman, who had accepted an appointment on this program, and was to open this discussion. He is sick, and has been for some time, and unable, therefore, to be present; and inasmuch as that is the case, I am going to declare the first question, and an exceedingly important one in connection with the other papers, open for discussion. I trust you will all feel from this time on that this is your meeting. It is not the meeting of any one person or organization. It is the meeting of the health officers of the State of Ohio, and the first question, "Diphtheria and Scarlet Fever—the cause of," is now open to any one who will kindly come to our aid by some remarks upon either one of those diseases, or upon the subject in general.

Dr. Miller, of Massillon—The subject stated is a very important one, and, while I do not feel that I am able to open the discussion at all as it should be, I doubt whether very many men would be able to open this discussion as it should be without giving it special study. Now I suppose we might say in regard to the cause of diphtheria, and the same is true of scarlet fever, that it is derived from a previous case of the disease. If this is not a correct professional view there are professional gentlemen here who will correct it. This is my understanding of it, that these diseases have their own characteristic features, and one case descends from another as truly as the calf is descended from the cow-if you please, no cow no calf. Whether the germs of these diseases have been absolutely settled I am not able to say positively, not being able to investigate for myself, but I believe that men who are capable believe that the germ characteristics of diphtheria is recognized, and of course the recognition involves a good deal; not only the finding of something in diphtheria, but the finding that this something is peculiar to these exudations, and not only that it is peculiar to these exudations but that it will produce a similar condition when planted elsewhere with favorable surroundings. These points have been taken up by men capable of these investigations, and, as I understand at present, they feel satisfied that the germ of diphtheria has been determined. The same, perhaps, is not true of scarlet fever. That there is a germ we have determined before, both by experience and speculation. We found that diphtheria was communicated from one to another; and yet this knowledge, as practical knowledge, is not very old. I remember very well when it was not generally settled among practicing physicians throughout the country that diph-

theria is a contagious or communicable disease. There is no question about that now. Now, another point in connection with the cause of diphtheria or scarlet fever, the exposure of the person liable to take it to the poison of another case, not necessarily an immediate contact with the one sick of diphtheria or scarlet fever, because either germ can be conveved in the clothing, and to some extent in the air. I suppose that diphtheria very often arises, and very often is communicated or passed from one member of the family to another, and communicated to others outside by the secretions that are thrown off from the throat on handkerchiefs or bed clothing and other clothing. I remember a few years ago, as illustrating the persistent life of these germs, an instance where I was called to see some cases of diphtheria, and I found four cases in one family. Two of them were very sick; one of them was so sick that it seemed to me likely that the child could not live. I could get no history of the exposure at all. The mother said they had not been anywhere, that she knew of, exposed to diphtheria. There had been no person in the house sick that she knew of. At a subsequent visit she said, "perhaps I can tell you something about where that trouble came from;" and she gave me the history in about this way: That some relatives in Pittsburg had had diphtheria; a little girl fourteen or fifteen years old had had a severe attack but had recovered to the extent that she was able to leave home, and came to visit these friends. I have no doubt that this jittle girl brought diphtheria in her clothing. I don't think there was diphtheria in her throat. I think that if she had been divested of everything that had been about her when sick, and subjected to thorough personal disinfection, she could safely have come out there. It was two or three months after she was sick. Two of this family died in one day, and I think it was carried in that way. Now these matters must lead us to think, and especially we who are entrusted to some extent with the health of the people. There are enough calamities to be met without hoarding the germs of avoidable diseases. This is, perhaps, all I need to say. There are a good many gentlemen here who are able to talk to you to much better purpose than I can, and without special préparations. I think I have said enough. I realize that I have not opened the question very deeply.

Dr. Buechner, of Youngstown—There is no doubt in my mind whatever that the cause of diphtheria is a specific bacillus. Prof. Roux, of Paris, examined eighty children admitted to the hospital as diphtheria patients. In sixty-one cases he found Loeffler's bacillus, and, therefore, pronounced the cases diphtheria. Thirty died and thirty-one recovered. In nineteen cases he did not find the specific bacillus, and therefore declared the cases not to be diphtheria. All these cases recovered. Jacobi, of New York, read at the Tenth International Medical Congress a valuable paper on diphtheria in America. He does not consider Loeffler's bacillus the sole cause of the disease. He says the pathognomic symp-

tom of diphtheria is its membrane. Where it is there is diphtheria. The diphtheretic membrane, and one or many or all the symptoms of the diphtheria process may be dependent upon different micro-organisms. Loeffler's staphylococcus has been found so often and so regularly that it is hardly possible to deny the causal connection between it and the cases of diphtheria in which it was found. Loeffler found it also in the mouth of a healthy child. Prudden found not staphylococcus but a streptococus, as the cause of diphtheria, but it was also found in otitis glandular suppuration, pneumonia and arthritis.

The Chair—Is there anything further?

Dr. Hedges, of Delaware—I would like to ask the gentleman who just spoke, whether he considers it necessary to have a previous case of diphtheria to start a case of diphtheria?

Dr. Buechner—I think you have the contagion just as well there as you have in typhoid fever, or cholera or any of the diseases; and that it depends upon a specific bacillus. I don't think any of these diseases can originate of their own accord.

Dr. Hedges—The germ theory is correct, then?

Dr. Buechner—Some people have a foolish idea that dirt and filth causes it. I hope that subject will be sifted to-morrow. I don't think it can, and I know it can't.

The Chair—Gentlemen, as we have a full program, perhaps it is not wise to go on with this discussion any further at this time. The discussion has been opened, and what may be called the modern theory of diphtheria at least, has been placed before you. It seems to me, from my limited reading of the subject, that the only point to be settled to-day is whether the disease is due to the bacillus itself, or to some tox-albumen developed by it. Now, the Klebs-Loeffler bacillus has been found by the larger proportion of recent investigators to be the cause of diphtheria. So universally has that been true in Germany and France that I don't think there are very many physicians on the other side of the water that do not accept that theory of the cause. But I have been reading recently some experiments made at the Pasteur Institute. They took the Klebs-Loeffler bacillus and injected it into rabbits and cats and some other animals, and in every case they had a disease similar to diphtheria. But later than that they took some of the fluid in which this bacillus had been cultivated and passed it through a porcelain filter, and found that the fluid after being passed through the filter still had diphtheritic power. Now it may be asked whether the disease is due to the bacillus itself or to some poison developed by its presence, and I think the scholars of the world are turning now in that direction for the solution of this very difficult and abstruse problem.

Dr. W. S. Smith, of West Milton, has been substituted for Dr. A. W. Hopkins in the second paper on the subject of how these diseases are communicated.

Dr. Smith-Mr. Chairman and Gentlemen: I do not want to disappoint you. I want to say I arrived in the city about eleven o'clock. Dr. Probst informed me that he was called to Springfield, and that the gentleman who was appointed to open the subject would not be with you; he therefore requested me to open the subject. I hastily jotted down a few points, which I hope will interest you. This meeting is not only made up of physicians and practical sanitarians, but also of laymen, men outside of the profession, and members, I hope, of the township boards of health; and if we use too many big medical terms we will confuse them. What they came here for is practical ideas on how to prevent diphtheria and scarlet fever, the dread enemies of civilization to-day in the State of Ohio and other places. As I said, I am not prepared to go into this subject in detail, or with any knowledge that I have obtained in the past two or three months; but I have jotted down a few ideas since getting the word that I would be expected to say something. Now, diphtheria and scarlet fever are like diseases. They are considered by some physicians and sanitarians, and also by some authors in our textbooks as one and the same disease. Some men consider them so, and I have in my own experience seen cases in which it was impossible at times to make a diagnosis just on the minute as to whether they were diphtheria or scarlet fever. The point they are to determine is not to make out a scientific diagnosis as a physician, but as a sanitarian to remember that we have a disease which may be diphtheria or may be scarlet fever, and that it is a disease which is dangerous to the public, and a disease which we ought to recognize and report to the health officer immediately. Then if there is doubt as to whether it is diphtheria or searlet fever we can call in one, two or three physicians to make a diagnosis. But the point is to have that house quarantined so that no germs, whether of di htheria or searlet fever, can be communicated from the inhabitants of that house to the outside world. That is the way in which diphtheria or scarlet fever is communicated to the outside world many times. Scarlet fever and diphtheria are diseases of the blood. The germ is received into the system, we cannot say exactly how, whether it is the Klebs-Loeffler bacillus, or whether the bacillus produces this material which produces the disease; probably this is not settled. I, with my venerable friend, believe that it is produced by the bacillus; but that is not the point exactly. The point is, how is it communicated to other parties; being in the blood the secretions that are made up from the blood may take these bacilli and communicate them to others. We all know what trouble we have with patients getting over diphtheria or scarlet fever. We have diseases of the kidneys, and we have paralysis after diphtheria, which shows that the germ of diphtheria has been received into the blood and has passed through the system, and has affected the nervous system and the brain. Now, if it has affected the excretory organization, the organism of elimination, why can't those persons that are taken out of bed, if

they come into communication with the outside world, carry the disease from one person to another in that manner? In that way we must guard, as health officers and as physicians, the exhalations from the skin and lungs Another source is nasal and pharyngeal excretions. Scarlet tever is accompanied by sore throat; and diphtheria is accompanied by severe sore throat, and the mucus membrane of the nose may also be affected. Children go to school and are admitted by the teacher, complaining only of sore throat, and they will sit down next to a well child, and the child will breathe in these nasal and pharyngeal excretions and go home, and the next thing we know it has scarlet fever or diphtheria. They are also communicated by the rooms where there has been a case, outbreak of diplitheria, which we were unable to trace at the start. We had no organized board of health, and the physicians of our town were at a loss to know where the diphtheria came from, and to this day we cannot trace where we got the diphtheria. We believe that some child was taken to a circus and brought it to our town; that the child was taken to the school-house, I think in October, and within the space of a week or so in all parts of the town very malignant diphtheria broke out, and in a few days, or within a week, probably, we had three or four fatal cases. We organized a board of health, and with the assistance of our Secretary, Dr. Probst, went to work in earnest. The first thing we thought of was to close up the school-house. We closed it up, and our school board, in the ordinary manner, disinfected it; probably they did not scrape the floor, or wash the walls down even, but they did make some showing at it. We kept the school closed, I believe a week, and in that time the fatal cases had developed. In a week or so we opened the school again, and in a few days we heard of more diphtheria. We closed up the school again until after Christmas. The same thing occurred again. The town was free from diphtheria and we opened our school again, and in a short time after diphtheria broke out again. In speaking to the board of education, and trying to get them to do something in the way of closing up the school and giving it a thorough disinfection, the everlasting question of finances came in the way; they always do in sanitary matters, you know. After considerable thought on the subject, we finally made up our minds that we would compel the board of education to close that school until they had done as we wished them to do. We wanted them to close up a certain well, too, and to kalsomine and paint the school-house walls, and varnish all the desks, and scrub the floors with bichloride solution, and do other things. They said they had not the funds, but we closed up the school in February, and that time it was not opened until the next year. In that time we spent two hundred dollars and cleaned it up well, and after that diphtheria did not break out any more. We also closed up the churches and prohibited public meetings. We had a very dull town, but we got rid of diphtheria. We had a good deal of trouble, and some fighting. It took a little backbone, but in that way I think we controlled the epidemic.

Diphtheria and searlet fever may also be carried by the milk. The scarlet fever patient, recovering and going into convalescence, may get out of the house too soon, and if he should milk the cows the scurf of the skin may be carried to the teats of the cow, and in that way carried into the milk, and so get into the household. You certainly recognize that that is an easy mode of earrying the infection. Of course nurses and physicians, and others who remain in the room, may carry scarlet fever and diphtheria. We cannot be too careful as physicians. Anima too, may earry the germs. I well remember that at the time we had diphtheria at our town a great many cats were running around with swollen glands, and I have no doubt that others have observed that. I had a cat in my own house which had large cervical glands, that broke and ran. A gentleman said to me, "Doctor, do you know that cat in my house has sore throat, and I believe diphtheria?" My opinion is that the eats had diphtheria, and were carrying it around. All cats should be shot.

(A voice.) How about dogs?

Dr. Smith—I did not say dogs; but dogs, if not too valuable, had probably better be shot.

Wells may be a source of infection. In my opinion the well may not only carry typhoid fever and cholera, but diphtheria and scarlet fever. If the Klebs-Loeffler bacillus is active and tenacious of life as the bacillus of typhoid fever and cholera, why cannot they live in a polluted well as well as the germs of typhoid fever or cholera. We had a well in our school-yard that had not been looked into for years, but we learned from the oldest citizens of that time that that well had been dug close to where anciently was situated some privy vaults, and we implored our board of education to take the money and drill a new well. They refused, and as I told you we shut up the school-house, and prohibited them from keeping school in that house until they had done everything we had told them. They finally closed up the well and drilled another one, according to our directions, in another part of the school yard.

Now, with these remarks, I hope I have opened the subject for discussion so that the gentlemen will have something to work on. I hope in my weak way I have interested you, and especially the gentlemen who are not physicians, and when they go home they will take these precautions and go to work in sanitary matters intelligently.

The Chair—Gentlemen, before the discussion goes further in this way I desire to call attention to the fact that an official report will be made of the speeches and papers. We have an official stenographer here, and a copy of this report when printed, will be sent to each one of you. The clerk of the board is here and will carry around a paper for you to place your names upon, as we desire a roster of this meeting, and

this will save you some trouble. I am very anxious to have the name of every one here. Again, I wish to say that in the further discussions that the persons entering into the discussions will give their names and addresses, so that the stenographer may get them. And I also ask that your discussion be on the particular topic under discussion at that moment.

We have divided the subject, as you see, into some six or seven papers. The paper now open for discussion is how these diseases may be communicated, and there must be a good many of you who will have something to say that will be of benefit to this meeting. It is now open for discussion.

A member—As to how scarlet fever may be communicated, I wish to state one instance that came under my observation a short time ago. Last year there was a lady in the eastern part of our city who had an attack of scarlet fever. She recovered, and shortly after recovering they moved to a relative's house, and they rolled up the carpet and stored it away. About two months ago that carpet was unrolled and put down. There was an interval, I suppose, of several months, from the time it was rolled up until it was used again; but immediately after that carpet was unrolled their little child had an attack of scarlet fever. It was the only way that we could find that the child got the scarlet fever. The child was over a year old. To us it proved clearly that it was communicated from something that had been retained in that carpet.

A. G. Cummings, of Oberlin—How long after a child is supposed to have recovered either from scarlet fever or diphtheria before he should be admitted to the schools?

Dr. Stanton, of Cincinnati-I will make this remark, that in regard to both these diseases it is impossible to fix the exact time that will fit all cases. The time in which the diseases will be communicable varies. For instance, in cases of scarlet fever, that disease may be communicated so long as the exioliation of the cuticle takes place. It is well known that the germ of the disease is found in the epidermus that is sent off after recovery, and as long as that takes place the child is in a source of danger. That process is completed sometimes in a week or two, and sometimes requires as long as two months. I was reading recently of the case of a child in which desquamation was continued for two months after apparent recovery from scarlet fever. Whether or not the germs of the disease existed in the desquamation all that time I cannot say; but it is generally regarded as a fact that as long as desquamation continues the person is a source of danger. So, also in the case of diphtheria. The time of the disappearance of the germs of the disease is very uncertain. They have been found in the throat for two or three weeks after the entire disappearance of the membrane; and as long as the bacilli are present, whether they are the cause of the disease or whether they are not, I believe as long as they are present in the discharges that person would communicate the disease. So it is impossible to fix a period or an exact time, and the only safe way is to fix the period so long that in the very large majority of the eases the child would have entirely recovered from the disease, and all the sources of danger would have been removed. The time is fixed in most countries—not in this country—but it is in some of the cities in this country. In France there is a time fixed; I have forgotten, but I think it is forty days in the case of scarlet fever, and, perhaps, a little less in the case of diphtheria. I have forgotten the exact period, but fixed periods are designated in most countries in Europe, and in some of the cities in this country, from which the child should be excluded from school after these diseases. I think there is one fixed period in this state, except in the cities, in one or two of which the time has been fixed by the local health authorities. Ordinarily, however, in scarlet fever the period, I think, is fixed at forty days; for diphtheria, I think it is about three weeks.

Mr. Lang, of Wellington—In my official duties as health officer (I am not a practicing physician), these cases came under my knowledge. We have in our town at this time a case of scarlet fever, two cases in one house. The parties have two cows and sell milk to their neighbors. I think they have nine milch cows, and the milk is taken to the kitchen, which is removed the usual distance from the sick room. The nurse who has charge of the patients does not go into the kitchen, and does not come in contact with the milk or milk vessels, or anything of the kind. Would you consider it unsafe to sell that milk from the house to their customers, knowing, as we all do, that milk is susceptible of carrying it?

The Chrir—Will some one, with practical experience, answer these questions?

Dr. Jones—I think I can answer the gentleman's question. If he puts the patients in an upper room and keeps his nurse away they will not communicate searlet lever to the milk; I am satisfied of that. I am satisfied I have prevented cases of scarlet lever by simply isolating parties in that way. I always take them to an upper room if possible.

Dr. Casper, of Niles—I have treated a good many cases of diphtheria and searlet fever, and I have made it a rule to treat these cases just about the same as I would smallpox; and I have treated a great many cases of smallpox. I do not permit any child to go out of its room as long as there is any sore throat. I think that you communicate scarlet fever and diphtheria by coming in contact with it, and I think that is the only way. I have practiced medicine forty-eight years, and I never communicated the disease to any family.

Dr. Carruthers, of Findlay—I am glad that attention has been called to the dangers of the milk supply. Milk and butter both are a source of contagion in these two diseases, and I think under no circumstances ought any one be permitted to sell milk or butter when there is either

scarlatina or diphtheria in his house. These diseases might be carried through the mails and on clothing, or through any personal contact, or through freight, and in many ways that are almost impossible to enumerate, and in ways that we would least suspect. The doctor from West Milton has spoken of the danger of conveying it by animals. I believe that is a very frequent source from which we derive both scarlatina and diphtheria. While these two diseases seem to have a marked kinship, each of them seems to be rendered more violent by filthy surroundings. I am, perhaps, a little off the question now, but I wish to state that where we have a good sanitary condition that both of these diseases are much easier controlled.

Dr. Collins, of Toronto—On the subject of how communicated, I speak from what I am acquainted with in my own neighborhood. One of the greatest difficulties found in my territory in controlling scarlatina, is the fact that the people are not willing or ready to believe that anything is scarlet fever unless it is what you would call malignant scarlet fever. I believe one of the most common sources of the transmission of this disease is by those persons who, though they are not confined to their room or bed with the scarlatina, are permitted to run around and mingle with other children, and frequently have been found in our schools. I am thankful that to-day every intelligent physician who is worthy of the name is a light to the public. He may not shine very far, but as far as he can he is teaching the people that scarlet rash, as commonly called, or what our medical books call scarlatina simplex, may, in the next case, be scarlatina maligna. This is one of the most common sources of carrying the disease.

Dr. Beuchner—I think, as the doctor just stated, that one of the causes why it is frequently communicated is that a great many people have a holy horror of having a card placed on the house, and some of the doctors have not backbone enough to do it, and then you hear that it is scarlet rash that they have, it is only scarlatina, and the thing is passed over and lots of people are exposed to it, and it is spread in that way. I know that from practical experience in our town.

Dr. Calvin—I want to call attention to the matter of school books as means of communicating these diseases, and especially scarlet fever. The board ordinarily has the books sent home, and as soon as they are able to look at anything they handle their school books, and they open them and handle them on the bed, or chair, or lounge, and in this shedding process in scarlatina these scales fall in between the leaves of the books and they are carried back to school, and perhaps three or six months after that there are cases of scarlet fever in the school; everybody wonders how it got there. In our school, if the books are sent home we do not allow them to come back to school. Many cases are attributable to school books in that way.

Dr. Hedges, of Delaware—I believe that it is a recognized fact that the contagion of scarlatina is the most tenacious of life of any of the infections, or will live longer than any other infection.

Dr. Beuchner-Not longer than smallpox.

Dr. Hedges—I stand corrected. I thought it would. At any rate it will live; it has been known to live two or three years, and can communicate the disease at the end of two or three years, and perhaps longer.

A member—Over twenty years.

Dr. Hedges-Over twenty years! Therefore it is very necessary for physicians to instruct the people where they are brought into contact with this disease, to remove everything in the way of clothing, curtains and carpets, and everything of the kind that can retain the contagion, and leave nothing but that which can be burned afterwards or thoroughly scalded so as to kill the infection. On this subject I am satisfied that physicians are guilty of carring this disease very frequently. We have twenty-five or thirty physicians in our city, and I don't think there is one of them that ever changes his clothing when he goes to visit a patient with scarlatina, or any other case of contagious disease, or puts anything on over his clothing. I have made it a habit myself to put on a linen duster or something over my clothing, and wash my hands before visit ing other patients. Two or three years ago I had a patient sent in to the Children's Home, where we had forty or forty-five children-a young girl who had been exposed to searlet fever. As soon as I found that she was going to have an attack of scarlet fever I told them to fit up a room, take out the carpets, and remove the curtains from the walls, and articles of clothing, and we put her in that room and hired a nurse to keep her there seven weeks. There were thirty children or more that had never had searlet fever, and not one of them took it. It has been my plan to confine patients with searlet fever, and thoroughly isolate them for six weeks, and not less. Dr. Stanton spoke of the time that is given in some of the old text-books. I think Flint gives it as six weeks. I think there are very few cases which are thoroughly desquamated in less than three weeks, and some cases will require even longer than six weeks. As long as there are any suppurating glands or sores about the mouth or nose there is danger of communicating scarlet fever to other persons. Thorough isolation of the patient is one of the best means to prevent the spread of this disease, and the same is true of diphtheria.

Dr. Miller, of Massillon—In connection with the communication of this disease (of course, as this program is arranged, it is almost impossible to avoid over-stepping the subject), but in the discussion I think something has been ommitted. Let the physician take special care not to convey the disease to other people. There is another consideration that is very important, and that is disinfection—personal disinfection of the patient. As soon as the disease breaks out, I instruct the mother or the nurse to sponge the whole body carefully once or twice a day with warm warms.

ter. (A spongeauswers the purpose better than cloths.) A little carbolic acid can be put in without any danger, and if this is done and the sponge is placed in a vessel of some kind and covered with boiling water, we will kill whatever germs there may be by subjecting them to the heat of boiling water. I suppose that would destroy scarlet fever germs. Now, afterthis is done, I have the surface oiled. This is a relief to the child. It is not so much difference what you use, or what kind of oil it is, it is a relief to the child, but it does more than that. It prevents these little scales from rising into the air. They are made heavy by this process of greasing. They absorb the oil, then the sponge takes them up and you destroy them with heat; then if you please destroy them again with corrosive sublimate. The same is true of diphtheria. The place to disinfect is the patient. I know it is hard to control little children, but make a solution of corrosive sublimate for them to spit into, and take care of it right in the start and I believe it can be done. I won't say effectually, but you can do a great deal. I have repeatedly treated cases of scarlet fever and diphtheria, and no other children in the family contracted the disease. If these germs of scarlet fever get into the air and fall upon a person's clothes they may be carried anywhere. The discharges from the diphtheritic throat or nose may become dried on handkerchiefs or cloths that are about the child; and what is the use of taking down the curtains and taking the carpets up, and yet allow the little fellows to spit over the bedclothes and perhaps hang the clothes in the sun a few minutes, and before two weeks be using these same clothes to cover the children. I think immediate and persistent personal disinfection is a very important matter in the management of this class of diseases.

Dr. Reed, of Bellefontaine—I want to ask a question. I want to ask what position a local board of health should take in the matter of communication of disease at school from drinking cups and such things. We have in our town a thousand children and two school buildings. In one of these I know that there is just one hydrant and about three tin cups for about five hundred children to drink from, and the thought occurred to me should the board of health interfere in the matter when there are cases turning up here and there over the town. A child, not being very sick, is allowed to go to school with sore throat. Is there not a good chance there for spreading the disease?

Dr. Hoover—Mr. President: I have not much to add to what has been already said, but I feel that I do not want to even tacitly admit the statement that was made here by the first speaker, that scarlet fever and diphtheria were considered one and the same disease. I don't believe that, and I don't want anybody to think that I believe it. There is a difference between the causation of the two diseases, so far as we are able to find out. The method of communication varies. I believe that they are both contagious; they are both the same in that respect. Whenever the peculiar poison of the one is taken into the system of a person, he is

very sure to develop the disease that is characteristic of the poison. Where the cases are similar, that is in scarlatina with excessive throat symptoms, we make a defferential diagnosis by modern methods of bacteriological examination, and if it is scarlet fever they will not find the Klebs-Loeffler bacillus. It is possible, however, for the two diseases to prevail at the same time in the same individual.

Dr. Smith—I did not want the doctor to believe that diphtheria and scarlet fever are one and the same disease. I do not believe that myself. I said they were allied diseases, and were recognized by some doctors, and spoken of by authorities in some text-books as one and the same disease; and while the doctor, probably, has not read it, I have.

The Chair—I suppose there is no more interesting question to come before us at this meeting than the one we are now discussing as sanitarians. We do want to know how diseases are communicated. The whole discussion awakens in my mind that we need in this State, as in Paris, a Pasteur's Institute, where these questions can be studied authoritatively and settled. If these diseases are due to germs, show the conditions of their growth; will they grow in all sorts of media? Will they grow in milk, in water, in filth? How can they be killed? A great deal of our knowledge has been gathered necessarily from the ends of the earth. We need some one to authoritatively settle questions for us before we can treat these matters properly. The next paper is on the subject of quarantine, by Dr. O. C. Stutz, Health Officer of Upper Sandusky.

#### QUARANTINE.

By Dr. O. C. STUTZ, Health Officer, Upper Sandusky, Ohio.

MR. CHAIRMAN AND GENTLEMEN OF THE HEALTH CONVENTION: To have been commissioned to prepare a paper for the opening of a discussion on the important subject, "Quarantine," came in the nature of a surprise, especially to one so lacking the ability of description and expression that the subject merits, in fact requires. You care not for a dissertation on the origin of the word, nor to be wearied with an exhaustive definition of its meaning, or of the past history of the enforcement of the powers that makes it a strong hand for the barring of the progress of disease and death. It is a legal power that can be, and very frequently is, unjustly exercised, to the detriment of personal happiness and the civil rights of people; but when its exercise is absolutely required in the interests of the public health, to stay some frightful contagion, then it cannot be too rigidly enforced, Then its protective influences should be insisted upon even to the very letter of the law that authorizes it, and if the laws do not provide ample provision for its effective enforcement the health authorities should demand of the law-making bodies the immediate en clinent of such measures as would strengthen the value of quarantine regulations and insure them respect by the people they were sought to restrain. It is on this line, I take it, that we should argue this question. A large number of the members of this assemblage, I feel safe in assuming, are physicians and surg, ons by profession, but when we come here to discuss matters that pertain to the public health, we leave our medicine cases and scalpels at home in our offices, appearing here as servants and representatives of the people of our

various communities, as members of state and local boards of health and health officers, with which last named class I have the honor of being officially identified. While I hold to the established and recognized code of ethics of the brotherhood of Æsculapius, as a doctor of medicine loyal to the principles of my school, I still insist and argue that as health authorities, we have a perfect right to criticise any shortcomings that our brethren are guilty of when they disregard and disobey the civil laws governing health regulations, (should they do so), even to masking or disguising the nature of a case under their charge in order to gratify the families they their serve in the capacities of regular physicians, to avoid the "disfigurement" of houses by the presence of the red cards of warning that dangerous infection lurks within. The physician, naturally, endeavors to not only exert his skill and learning in the practice of his profession in the healing of wounds and injuries, and in the alleviation of suffering in cases of illness of whatever degree of severity, but he also seeks to encourage with hope and oftimes with absolute assurance, the families and friends of those under his professional charge; and no doubt, when urgently implored, coupled with earnest promises that the rules of unofficial quarantine will be observed, the true character of the case will not under these conditions, in many instances, be reported to the proper health authorities. If there is not already a section or clause of law that will punish this kind of lenient practice, it should be enacted and religiously observed, for masked contagion often spreads with dangerous effects and awful results, rendering health boards utterly powerless. The health authorities should at all times be in possession of the facts of the existence of every case of contagious or infectious disease within their territorial jurisdiction.

Quarantine regulations, when needlessly enforced, give just rise to serious complaint. In such cases families are restrained from leaving their homes, and association with neighbors and friends is strictly forbidden. This, when there is no cause for it, naturally humiliates those who come under its provisions, and furnishes a just cause for indignation. The physician, therefore, who has a case of illness under his care which assumes a contagious or infectious character, or supposedly so, should be certain of his diagnosis before reporting it to the health authorities for their action, for the reason just stated. Should be happen to be in doubt as to the true character and diagnosis, he should call consultation before reporting the case for quarantine, for it would be unjust to quarantine a family for simple disease of the throat, which is frequently done, a statement that many of you know to be true. Attention is called to this phase to insure care, yet I would paraphrase the humane maxim of the law that "It would be better that ninety-nine guilty men escape than that one innocent man should suffer," by saying that it would really be better that a hundred mistaken cases of disease be quarantined than that one case of malignant diphtheria be left unguarded to spread death and danger and suffering to a community. In all diplitheritic cases a sanitary policeman should be assigned to guard the house and see that all requirements of quarantine are strictly observed, and to prevent ingress and egress to or from the house until the period of dauger is passed beyond any doubt. This method is liable, however, to be criticised by some people because there is considerable expense attached to it, but to such we would say that the expense would be nominal, if inaugurated at the first danger of an epidemic, compared to what it would be if the authorities waited until the scourge has attained such proportions that an entire village or city would have to be quarantined, as was the case at Munice, Ind., re cently, with its epidemic of smallpox, and which eventually entailed a public expenditure of thousands and thousands of dollars, besides an alarming mortality. In cases of diphtheria the patient should be taken and treated in separate apartments from all others, fitted up for the purpose, and all persons who have been exposed, or there is reason to believe have been exposed, should be subjected to the

strictest sort of isolation and disinfection until all danger is known to be averted. Nurses who are engaged in the care of patients afflicted with this disease should be compelled to keep from mingling with people, notwithstanding their reliance in the virtues of funigation, or disinfection. Better pay them well for the sacrifices they might be compelled to make rather than take the risk that careless or thoughtless inattentions on their part might result in. My own experience in handling some smallpox cases in Wyandot county several years ago, gave me some valuable information, and I strictly observed the plan I have just mentioned. I made my home and headquarters alone in an old and abandoned log-cabin near the house where my patients were kept, and I visited them at regular intervals to administer remedies and to make careful pathological observations of the conditions. My cabin, where I made my home during all those weeks, was hardly fit for the abode of animals, let alone for man, but it was the best at my disposal. When preparing to visit my patients I would step to an old stable structure near by and make a complete change of clothing, my visiting suit being of rubber, and at each change thorough disinfection was resorted to. Nobody was permitted to go to or near the house but myself, from outside. I ordered the medicines and the provisions needed by my patients and their nurses by shouting to a man whom the authorities employed for that purpose. He did not approach the plague-spot close enough to be in danger, and he would return with the goods ordered, deposit them at a certain place and depart. I would get them and take them to the house. By strictly observing this system the dreaded disease was kept from spreading, and was in due time totally eradicated. My enforced isolation was not a pleasant one, I assure you, but it endangered no one else and made my management of the situation successful in preventing another single case of the disease. It was my first experience in being quarantined and in enforcing quarantine measures.

Diphtheria and scarlet fever are diseases that are dreadful enough to merit the most watchful attention of health authorities, but with rigid regulations to govern their care and to control the movements of the members of the families where they exist, they can be successfully managed at the homes. By our present laws and the fidelity with which the State Board of Health insists that local boards be on the alert, the health laws even extending to the remote townships of the rural regions, the stay of epidemics can be made effective. I might refer at length to the various powers of boards of health, but it was my duty to open the discussion on only one of the departments, and I sincerely trust, that while I may not have advanced anything new or even valuable, that what has been said may lead to the development of grains of good from the chaff of words.

The Chair—The subject of quarantining diphtheria and scarlet fever is now open for discussion for a few minutes.

Dr. Sutton—It seems to me there ought to be a law requiring physicians to put on slips of some kind, rubber or otherwise, before entering a room where there is a contagious disease. Now, if they could have a slip hanging just outside of the door, one that would button closely around the wrists and neck, and after coming out take that off and have an antiseptic solution to wash the hands and face in, there would be very little danger of carrying diseases. I don't think there is any question but that physicians frequently carry it. This slip might be of muslin or something of the kind which could be put into boiling water, and after the patient is dismissed, it could be used time and again.

The Chair—If there is no one else that wishes to speak on this question, I will call on Dr. Stanton to read his paper on disinfection.

#### DISINFECTION IN DIPHTHERIA AND SCARLET FEVER.

By Byron Stanton, M. D., Member of State Board of Health, Cincinnati, Ohio.

I have been requested to say something about disinfection in diphtheria and scarlet fever. There is now a general consensus of opinion that the infectious diseases are dependent upon micro-organisms (although the particular germ has not yet been demonstrated in all of these affections), and that the prevention of their spread is to be effected by the destruction of those germs. I need not say that I fully accept these views, and am therefore a believer in thorough disinfection. Argument is not necessary to show the importance of taking all possible precautions to prevent the dissemination of diseases so dangerous to life as diphtheria and scarlet fever. Isolation and disinfection are the chief means at our control to check the spread of all communicable diseases, and few of them are more easily checked than the two now under consideration. That much can be accomplished by these means has been repeatedly demonstrated. Let me instance the State of Michigan, where it has been shown that failure to isolate the patients and disinfect the premises resulted in about five times as many cases and deaths from diphtheria as occurred where these precautions were carried out—a prevention, it is estimated, of nearly 3,300 cases and over 400 deaths in a single year by isolation and disinfection. Other instances are not wanting to corroborate this statement. These facts argue strongly for greater care in regard to disinfection. If this is neglected, of what avail are quarantine and isolation, which are only continued until the recovery or death of the patient.

As custodians of public health, few duties demand of us more careful consideration and more rigid enforcement of the rules for restriction and prevention. Until local boards of health can be brought to fully appreciate their responsibilities in this direction, they will not succeed in stamping out these diseases, the infectious principle of which is specific and generated in the patient, and which has a vitality far beyond what is generally supposed. Just how long the contagium of these two diseases may live is not known. While, ordinarily the ultimate fate is oxidation or putrefaction in a short time, it may, under favorable circumstances, retain its infective power for years. In one case, infected clothing packed in a box, without disinfection, for ten years, communicated scarlet fever to one susceptible. An infected book, twenty-six years in a trunk, communicated the same disease to the boy to whom it was given. Other cases are on record of transmission of scarlet fever by contagium remaining in houses five, six or more years. The contagious principle of diphtheria has as great vitality. If the house is not radically disinfected it may be a center of infection for a long time. Dr. Strock, of Camden, N. J., reports one instance of a house vacated the day after funeral of a child dead of diphtheria that remained unoccupied one year, and was taken by a family consisting of parents and one child; in three weeks thereafter the child died of diphtheria -undoubtedly the sequel of the first case. Not a few cases are reported of communication of the disease after one year, and others of two, three and even eight years. Do not these facts show the necessity for competent supervision of this important work of disinfection?

A question that is often suggested is as to whom the duty of disinfection belongs, the householder, the health authorities of the place, or the physician in attendance upon the case. If left wholly to the members of the family to perform, without personal direction by competent persons, the work is imperfectly done, or not done at all. My own feeling is that the duty ought to devolve upon the family physician—that he should feel that he has been remiss in his duties if he fails to observe all the precautions possible to conserve the public health. To be content with the mere effort to cure his patient and make no effort to prevent the spread of the disease to others is to fall far short of the highest aims of his profession. Were

all physicians fully alive to the noblest purposes of medicine, and duly qualified to carry out effectively the precautions required for the prevention of the spread of disease, there would be no necessity for official control of such matters as disinfection. But my observation while acting as a health officer, of the frequent total disregard on the part of many physicians of all sanitary precautions, and the ignorance manifested by some, have convinced me of the necessity for official supervision of matters of this kind. We cannot, if we would, impose this work on the busy physician by the enactment of laws, hence it should be mandatory on public agents to attend to this responsible duty. Not that I would regard it as a duty of the health officer to go in person to the plague-stricken house, but he should know, either personally or by sending a sanitary inspector instructed in the methods and means of disinfection, to act for him and to know that all of the precautions for suppressing disease are observed. As a paid health official having charge of the sanitary matters of his place he cannot do less.

One of the duties of health authorities is to instruct the people in regard to the nature of these communicable diseases; that not only are persons affected with these sources of danger in the community, but the apartments in which they are, the clothing which they wear, the bedding in which they sleep, the belongings of their rooms and the air which they breathe are contaminated, and to be rendered safe must be subjected to such measures as will destroy the disease germs existing in them, and when these are destroyed they will have taken the great step towards successfully controlling the dissemination of these diseases. The cause of diphtheria having been shown to be a certain micro-organism, (and it is believed, though not yet proven, that scarlatina has its specific germ), the problem of prevention has been simplified. We know that by the destruction of these germs all danger of transmission is removed. But some of these germs, or their spores, are hard to kill. An exposure to fumigation with chloride or burning sulphur that would surely kill a man, is often harmless to them, their power of resistance depending upon the nature of the medium in which they are suspended.

The means of disinfection must be practical and not too expensive. To reduce the labor and expense of this work, care should be observed at the onset of the disease to remove from the room all articles not required for the comfort or necessities of the patient and nurses. Unnecessary curtains, fixtures, carpets, etc., should be taken out. In this way the number of articles to be treated can be greatly diminished and the disinfection more economically and expeditiously carried out. Toys and books that are permitted to remain in the room should be burned as soon as convalescence is established or the child has grown tired of them and no longer needs them for its annusement.

Attention to ventilation of the sick room is of especial importance in cases of infectious diseases, not only in the interest of the patient and those necessarily remaining with it, but also in facilitating the subsequent work of disinfection. Furnishing a liberal supply of fresh air is much better than trying to purify the air by chemicals, such as chlorine, carbolic acid, etc., which are offensive and so little good as germicides in the small amounts that can be used in an occupied room that they may be regarded as practically useless, as well as an affliction to the occupants of the room.

When should the work of disinfection be begun? I answer, as soon as the stage of communicabilty is reached. Both of these diseases are communicable early, and the disease germs should be destroyed as soon as cast out of the body with the sputa, the dejecta and the urine. These should receive our first attention. The expectoration should be received on cloths, which are to be immediately burned or into disinfectant solutions, such as chloride of lime, carbolic acid; or preferably, because free from offensive odor, solution of corrosive sublimate. Contaminated

articles of clothing or bedding, no longer in use, should be removed from the room, and if they cannot be immediately boiled should be soaked in a solution of corrosive sublimate—thirty grains to one gallon of water.

After the recovery or death of the patient the important work of making the room fit for occupancy should be begun. Everything that is of little value should be burned. Clothing, bedding, towels, etc., that can be boiled should be subjected to boiling for half an hour in water to which some strong soap or soda has been added. Before being taken to the wash room they should be soaked in a five per cent. solution of carbolic acid, or a solution of chloride of zinc (1 to 240) or chloride of lime (2 ozs. to 1 gallon), or of corrosive sublimate.

If the paper of the room is removed the work of thorough disinfection can be more surely accomplished. If the ceilings of the room have been frescoed they should be rubbed off with soft bread, from which the crust has been removed; if they have not they should be whitewashed or whitened. The woodwork, floor and furniture should be washed with a solution of corrosive sublimate1(60 grains to 1 gallon), and afterwards scrubbed with soap and water. The textile fabrics that cannot be washed should be well spread out and subjected to the action of some volatile disinfectant, as chlorine, the fumes of burning sulphur or live steam. Disinfection by dry heat may be resorted to, but this, to be positively germicidal in woolen fabrics, requires a temperature of  $240^{\circ}$  to  $260^{\circ}$  F., which renders its application impractical except in specially constructed chambers.

In regard to the relative value of the various disinfectants used for apartment disinfection, there have been innumerable experiments to determine what agent is the best, most reliable in its germicidal action, most easily applied and within a reasonable cost. While there are many agents that will destroy the microbes, some are expensive, some are destructive, some are inconvenient to use or for other reasons are not applicable in practical disinfection.

Steam at a temperature of 212° F, the highest temperature of steam that can be maintained except in steam-tight chambers where it can be subjected to pressure is one of the best disinfectauts, and will destroy all of the germs of disease; but owing to the impossibility of maintaining steam at such a temperature in living rooms for a length of time to be positive germicidal, other means must be resorted to for apartment disinfection. For this purpose one of the disinfectant gases chlorine or sulphur dioxide-must be used, the latter being given the preference because of its cheapness and the facility of its application. The burning of sulphur in rooms is the most common method, but the amount burned must be in the proportion of not less than three pounds of sulphur to every thousand cubic feet of space. To use this effectively, all flues, doors and windows must be tightly closed to prevent the escape of the gas. To avoid danger from fire, this should be burned in an iron vessel placed upon a brick in a tub containing an inch or two of water. To insure complete combustion, the sulphur should be moistened with alcohol, and when ignited the 100m should be closed and kept closed for eight or ten hours, and then thoroughly ventilated. The presence of moisture adds greatly to the disinfecting power of burning sulphur by converting the dioxide into sulphurous acid. But no matter how used, sulphur fumes are inferior to corrosive sublimate to destroygerm life, and only has a preference because of the facility of its application. In cases of great contamination it should not be depended upon alone. The use of chloride of lime or free chlorine, if too long continued is injurious to clothing. It should be borne in mind that all disinfectants require time.

The bodies of those who die of diphtheria or scarlet fever should be completely enveloped in cloths wet with carbolic solution, 1 to 20; or chloride of lime, 1 to 40; or a strong solution of chloride of zinc ( $\frac{1}{2}$  lb. to 1 gallon), or a solution of corrosive sublimate, not less than two per cent., or may be surrounded with sawdust, moistened with one of these solutions, and early interment should follow.

If drains, water-closets or vaults have been contaminated with the discharges from cases of infectious diseases, they should be disinfected. Solutions of chlorine, chloride of zinc or bichloride of mercury may be used, keeping in mind that the chlorides and free chlorine are injurious to plumbing. Permanganate of potash is a very good agent for such disinfection, and is only objectionable on account of its cost.

The Chair—This important subject is now open for discussion.

Mr. Galleher, of Sycamore—It seems to me that these two questions of quarantine and disinfection are of the most importance to us, as boards of health, of anything we have to meet. Now, a few years ago-two years ago-in the village in which I live we had diphtheria. We also had a few cases of scarlet fever, and it seemed almost impossible to control it, and it was only done after the most rigid rules had been enforced by the board of health. About that time I was elected health officer. and in making an examination, which I did immediately upon my election, I found the sanitary condition of the village very bad. One of the greatest causes of disturbance and of disease that I found was in the kitchen sinks and outhouses. In many instances I found that the wastepipes or tile had been in for a number of years, and they never had been disinfected in any way; there never had been anything done with them, and they had become filled up with filthy substances that was a fit place to harbor disease. I found this to be true, that in almost every instance where these conditions existed, there was more or less disease. If it was not searlet fever or diphtheria it was something else, and the people were continually complaining. Now, I had the filth removed and the drains disinfected, and since that time our town has been comparatively free from disease. It seems to me that that part of the work should receive more attention.

Dr. Bridinger, of Tiffin—I have a great deal of faith in disinfection, more so than anything else for the prevention of disease—that is contagious diseases. I have also a great deal of faith in cleanliness—looking after the surroundings. About four years ago we started in thoroughly and became better organized as a board of health. I was elected health officer, and immediately looked after the cleaning up of the city. We had a great deal of trouble, but we went right on and endeavored to clean up the city. But about this time we had what you might call almost an epidemic of diphtheria. We gave instructions to the people where diphtheria existed how to take care of it. I personally visited them, but diphtheria seemed to be spreading. I began to look around to see what the cause of it was, and made the discovery that instead of the people disinfecting and cleaning up, as we instructed them, they virtually did nothing, I immediately directed the sanitary police to get the necessary apparatus and go to work. Now then, the way we disinfect is this: As soon as the physician notifies us that a case of contagious disease has been discharged, I sent a sanitary policeman there with his

apparatus to disinfect and fumigate the house. In case of death, the sanitary police is there before the corpse leaves the house with his apparatus, and the moment the corpse leaves the house he goes to work, and by the time the family returns the sick-room and all clothing is fumigated thoroughly. The way we do it, we have a kettle and then we have another kettle a little smaller than that kettle placed within it, and the larger kettle we set on the stove and have it filled with boiling water, and in the smaller kettle we put four, five or six pounds of sulphur or brimstone, as much as is necessary, owing to the size of the room, and we set the .kettle with the brimstone on the stove until it gets hot and gets afire: then set it in the kettle with the boiling water and then cover it over and set it in the room and the fumes striking this cover escapes, and we leave that burning from an hour and a half to three hours. We leave the room closed eight or ten hours, and sometimes longer. Now, we never experienced any trouble after that. I have only a recollection, since we started on that method, of three families where they have had a repetition of diphtheria in the same family, and I think the diphtheria was already planted before the house was fumigated, for the simple reason that they could not isolate properly, and they could not get along but what they would have to mingle together more or less. Now then, we have sewerage of about thirty-three miles, I suppose; I think we have probably one of the best sewered cities in the state of Ohio. There is not a street but what has its sewerage, and we are endeavoring now to have everything drained into these sewers that we can, water-closets and everything else. During the summer season, and after spring opens up, and until the fall, we flush these sewers; to do it more effectually, we have a water-tank that holds about twenty-five barrels of water, with an eight-inch opening. The terminal ends of the sewers are eight inches. We fill the wagon and drive to the opening and open the tank and let that twenty-five barrels of water into the head of that sewer, and then go on and do the same thing all over the city. On the paved streets, where we can, we take this same wagon and fill it with water every week, and sometimes twice a week during the summer, and wash down the gutters into the sewers, and then wash out the sewers again, and we have not had any particular trouble as regards contagious diseases. I think that there is nothing more successful in preventing the spreading of disease, and in keeping it down, than thorough cleanliness and disinfection.

Mr. Hoy, of Akron—I should like to ask you how you disinfect the house when the people are sick in the house, when you first go to the house?

Dr. Bridinger—I would simply say, if I understood you rightly, that we never disinfect the house until after the people are away, so that we can fumigate it.

Mr. Hoy—We disinfect the house when there are other sick people in the house.

Dr. Calvin—The most of this disinfection that is talked of is in the city. Now a great deal of this disease occurs in the country, three, four or five miles away from any town or village. I would like some one to tell us what to do then. Some of the worst cases I have ever encountered, where whole families were sick, have been in the country. I have never been put more to my wit's end than in these cases. No person would go near them. It amounts almost to a locking up of the house. I wish someone would take up that feature of disinfection.

Dr. Stanton—The idea of my paper was in regard to how disinfection should be carried out by health authorities. But I said that I thought that it should be the first duty of the physician to look after disinfection; and in the country, where they have no health authorities it becomes still more the duty of the family physician to instruct the family in the methods and means of disinfection. I think it is a duty that he should not shirk, and if it is not done he should feel that he is criminally responsible for cases that occur subsequently. The manner of disinfection in the country would be just the same as in the city, of course, thorough disinfection of the room and everything in it would be precisely the same. The only difference is that where there are no sanitary authorities to look after this matter it becomes more than ever the duty of the family physician to make it his business.

Dr. Young, of Chicago Junction—This matter of the disinfection of rooms in the country is very easily accomplished. Most every physician has a steam-atomizer nowadays, and by the use of a strong solution of corrosive sublimate I think the room can be thoroughly disinfected, using carbolic acid and corrosive sublimate freely.

Dr. Beuchner—I don't think it is disinfecting at all if contagious diseases are left to the people of the family to disinfect. I think it ought to be carried out by the proper officer of the health department, in the township as well as in the city. I don't care what instructions you give them, how much you urge families to disinfect the house, you can depend upon it that it is not done right, not once in a hundred times. As long as I was health officer I made it a rule and it is a rule now, that the sanitary policeman disinfects the house, and then it is done thoroughly, and we have no trouble afterwards.

Dr. P. D. Reefy, of Elyria—I want to suggest, Mr. President, that I think that a physician ought to be provided with the means to disinfect a household that he may visit, just as he should be provided with a pair of saddle-bags or medicine case. People generally depend upon instructions from him, and he ought to be prepared to instruct people how to keep well as well as to cure disease.

Dr. Hoover—Mr. President, I presume the gentleman does not mean that the doctors should carry with them the kettles, etc., to burn the sulphur in. He might have numerous cases of contagious and infectious diseases, and we cannot always tell when we are going to meet with a case; it is impossible for doctors to do this, and it is not any more the doctor's duty to do it than it is the duty of some person appointed by the community, not a bit. That is not his business any more than it is his business to bury the corpse if he loses the patient. Disinfection should be properly carried out. There is not any question of its value. It has been proven repeatedly. But it should not be a show of disinfection: it should be effectually done. A steam-atomizer might do some good, and the burning of three or four pounds of sulphur in a room might be more or less effective, provided the room was not too large. The use of carbolic acid may do some good, provided it is strong enough and is sufficiently used. The immersion of infected goods in boiling water might do some good, if they are kept there long enough and the water is kept hot enough. Now, there is not any ambiguity about disinfection. It is reduced pretty closely to a science. Experiments in this direction have shown that certain antiseptics, or disinfectants, more properly speaking, have germicidal effects under certain conditions, and unless these conditions are present the disinfection is of no avail or of little value. I want to say one word about the care of scarlet fever patients during the attack, as I believe it facilitates disinfection and renders it a little easier, or rather it restricts or limits disinfection. has been my practice, for a number of years, to have my patients, as soon as I am satisfied of the diagnosis, to advise or direct the mother or the nurse to have made a union suit that is complete from the neck to the feet, made like drawers and closed up with feet on it like stockings, and buttoning around the neck and wrist. Now, it is well enough to have two of these, and more, if the means of the patient will permit. Every morning, the suit that has been on the previous day is taken off carefully, the patient standing on a piece of rubber sheeting; it is stripped down carefully, and as it is stripped down the patient is sponged off, and I do not use a sponge, I advise them to use a soft cloth; that cloth is boiled or burned after being once used. Wash the child down rapidly as the clothing is stripped down, and dry it off carefully. As soon as the clothing are stripped off they are immersed in a bucket of corrosive sublimate solution, the strength of a drachm to a gallon of water. As soon as the child is dried, I have it greased all over with cocoa butter. I like it because it has a pleasant odor. Dr. Miller suggested, a few months ago, the benefit of the use of grease, and I have observed the same thing, that it renders the patient comfortable. It relieves the extreme degree of heat, and the sensation is very pleasant. He suggested another benefit of this oleaginous application, and that is that it prevented the flying of these scales and disseminating themselves through the room. As soon as the child is greased, and this can be done in a short time, a fresh suit is put on, and the child put back to bed, the face and hair have been washed first, so there is no chance for the scales to escape. The suit that has been removed after disinfection

is rinsed through water carefully and hung out in the sun, if it is fit weather, and allowed to dry. I believe that is a good method of treatment. There are very few patients but that are glad of it. They feel better afterwards. Now, in disinfecting the room, my preference is bichloride of mercury. I believe it is the best germicide we have to-day; but it should be used in proper strength, and I want to say that I do not believe you can spray it into a room with much actual benefit. It may relieve a little bit, but it is not thorough. The best way to use it is in solution and wash what is washable. When it comes to disinfection by sulphur, the room has got to be perfectly prepared for it, and all the cracks and crevices about the windows and the doors must be properly stopped, and the chimney—that does not want to be forgotten—so that there is a degree of saturation of the atmosphere within the room which will kill the germs. Unless you attain that degree of saturation you do not disinfect the room thoroughly. It may be partial, but it will not be thorough. Remove everything in the room. When a child is found sick with a contagious or infectious disease, what we want to do is to simplify the process of disinfection. The carpet is the most difficult. It can only be disinfected by submitting it to the proper degree of steamheat or dry-heat, but the steam-heat is the most practicable.

Mr. Gerrish, of Oberlin—I will ask you whether, in cities that have sewer systems, the excrements should be disinfected before being cast into the sewers; and if not, whether there is any liability of people in other houses acquiring the disease?

Dr. Hoover—If you want me to answer that, I will say yes; that is, in certain diseases. It is doubtful whether the poison of those diseases is directly due to the excrement unless it is infected by the poison itself; it does not come from the alimentary canal directly. It is never disadvantageous to disinfect. Dr. Beuchner has voiced my sentiment when he speaks of having disinfection done by health authorities. If I could have my way about it, every health board would have what I call a disinfector; a man who is thoroughly advised as to the various disinfectants and the conditions under which they do the best work. Then he could go into a house and disinfect it. You could not do that here in Columbus. You could not go into a house here and disinfect it under the present condition of affairs. And yet people will listen to their physicians and I have had no trouble, and I know of many of my colleagues here who have no trouble in securing the necessary disinfection of houses. People will do that for their own sakes.

Dr. Jones—In cases where property has been destroyed by state or local boards of health, is it the duty of the state to pay for that property?

The Chair—That matter, if you will pardon me for speaking, is now before the legislature. I understand the House rejected a bill before it providing for the payment of some fifty dollars worth of property destroyed in the case of a smallpox epidemic in Darke county. The bill failed in the House.

Dr. Leick, of Cleveland—I am familiar with the method of Dr. Miller, and have used it for several years in treating scarlet fever and found it excellent. Now about disinfecting a room with bichloride of mercury and the steam-atomizer. That is an improper disinfection. It is worse than none. You cannot disinfect with a steam-atomizer. Better have no disinfection at all and caution the people against entering the room. The greatest danger we have to contend with in Cleveland is imperfect disinfection. We send an officer to disinfect and we take no person's word for it.

Dr. Hoover—How long have you done that?

Dr. Leick, of Cleveland—For about a year, and we have had no trouble since then; but before that there was always trouble.

The Chair—Gentlemen, the time is passing so rapidly that I think we shall be compelled to discontinue the further discussion of the papers. Dr. LeFevre has just entered the room, and I will call upon him to read his paper upon the question of "Closure of Schools."

#### CLOSURE OF SCHOOLS IN DIPHTHERIA AND SCARLET FEVER.

By Dr. Edwin Le Fevre, Health Officer, Sidney, Ohio.

In our effort to control such formidable enemies to health and life as diphtheria and scarlet fever, we should not hesitate to use every means at our command. If these two enemies of childhood could be stamped out the death rate of our state would be very materially reduced. These diseases are now universally admitted to be contagious, and hence infected persons should be prevented from association or contact with the non-infected as far as possible. As one means to this end the closing of schools during epidemics is often resorted to. That this is done often, with good results, all will perhaps admit. That the indiscriminate closure of the schools whenever and wherever contagious diseases make their appearance is bad practice must also, I think, be admitted. I wish to say in the beginning that I have never been in a hurry to advise the closing of the schools because of the presence of any contagious disease in the community.

I was not led to believe that in opening the discussion of this topic I would be expected to make a strong plea in favor of the closure of the schools. Had I so understood, I would have declined the honor. I am in favor of any means by which we can suppress contagious or epidemic diseases, and if the closing of schools could be shown to be necessary to this end, I would heartily favor it. It is not necessary for me to tell this body of men that the closing of the schools of any community is not a thing to be done ruthlessly or without a show of reason. The importance of the work in which they are engaged, to say nothing of the financial interests involved, demand that we keep "hands off" unless we have good and sufficient reasons to do otherwise. It is my earnest conviction that if our schools were properly protected it would seldom be necessary to order their closure. I have come to this conclusion after a careful consideration of the subject, backed up by some practical experience.

We often hear of the schools in a certain locality being closed because of the existence of two or three cases of diphtheria or scarlet fever. This, in my judgment, is wholly uncalled for, at least in the majority of instances. My plan would be not to close the schools but to protect them. To this end there should be a united effort on the part of the health officials, physicians, teachers and people. Physicians have it in their power to do much good in this direction. If there is reason to sus-

pect diphtheria or scarlet fever on his first examination or visit to a patient, the physician should make it his duty to request that not only the patient but all persons in the same house be kept out of school until further developments. As soon as a diagnosis of a contagious disease is made, which should be as early as the circumstances will permit, the board of health, through its executive officer, should be notified at once. It then becomes the duty of that officer to see that no person from the infected house enters any school—public, private or parochial—until all danger of conveying contagion is past. Teachers should be on their guard constantly to keep contagious diseases out of their schools. Much might be done, I think, by a systematic instruction of teachers, not only in anatomy, physiology and hygiene, but in the elementary principles of diagnosis, especially the diagnosis of communicable diseases.

Many children are not seen by a physician in the early stages of a sickness. Parents will often persist in sending children to school notwithstanding the fact that they have a contagious disease. Teachers and superintendents should be ever on the outlook for such cases, and those who are responsible should be made to feel the correcting and restraining power of a board of health.

Fever and sore throat are always to be regarded with suspicion in a child. This is important, and doubly so when diphtheria and scarlet fever are prevalent. No child, manifesting these symptoms, should be sent to school, at least not without the consent of a physician.

It has been suggested that in large towns and cities a medical or sanitary supervisor should be employed, whose duty it would be to act as instructor both of teachers and pupils in anatomy, physiology and hygiene, and to have a sanitary supervision over all the schools. I can see very readily how such person, properly qualified and active in his duty, could be of great service, not only to the schools but the entire community. The laws of this state, I believe, permit the employment of such an official. It is my honest conviction that by pursuing the course I have indicated it would be seldom necessary to resort to closure of the schools. Unless we are sure that quarantine regulations can be carried out, it is uscless to close them at any rate. Children in school are, for various reasons, safer than on the streets. My views on this subject may be regarded as extreme and not be concurred in by all present, but as I have said they are based on a careful study of the question and practical experience as a sanitary official.

In a recent epidemic of diphtheria in my own town of Sidney, a careful investigation did not reveal that the schools cut much of a figure in the spread of the disease, or that their closure was a very material aid in abating the epidemic. Isolation and disinfection were the important factors, as they always must be, that enabled us to cut short the spread of contagion.

In conclusion, I would say, do not be in a hurry to close the schools, but first use every possible means to protect them from infection. If for any reason you are unable to do this, or the epidemic becomes wide spread, close them, but insist on the children not being allowed to run at large and the quarantine of all houses wherein the contgious disease exists. Unless this is done the closure of the schools will result in nothing except to appease the minds of the people and to save the teachers and superintendent from making a bad record of attendance. The matter of closing the schools during the presence of diplitheria and scarlet fever, is one that calls for intelligent and considerate action. We should not yield to the heedless clamor of excitable people, nor should we refuse to do that which would be for the best interests of the community.

The Chair—For fear we may overrun our program and you may not be able to remain until these papers are read, I will call upon Dr. Spencer, Health Officer of Weston, to read his paper on "Precautions by Physicians, Ministers and Undertakers."

Dr. Spencer—While listening to the various papers and discussions I almost felt that they had got hold of my paper, they covered so many of the points I had written down. So if I seem to repeat what has been said I hope you will excuse me, because I had it written before I came here.

PRECAUTIONS TO BE TAKEN BY PHYSICIANS, MINISTERS AND UNDERTAKERS IN DIPHTHERIA AND SCARLET FEVER.

By Dr. G. B. Spencer, Health Officer, Weston, Ohio.

GENTLEMEN: The subject assigned me being the sixth in the series devoted to the discussion of the prevention of contagious diseases, is, as you will observe by the program, "The Precautions to be taken by Physicians, Ministers and Undertakers in Diphtheria and Scarlet Fever."

The need for a full and free discussion of this division of the subject is perhaps very aptly prefigured in the following remark which I quote from the letter of Secretary Probst extending me an invitation to prepare a paper on this subject, and I hope the Secretary will not consider it a betrayal of confidence when I quote his words, which are as follows: "From personal observation, I am sure there is often great lack of precaution, by physicians, ministers or undertakers, in connection with cases of diphtheria and scarlet fever." My own personal observation corroborates the statement of Secretary Probst. It is a great truth aptly put. I must note another statement from the Secretary's letter. He says: "Please note that proposition 7 deals with burial precautions, and in treating on the subject of precautions to be taken by undertakers, do not encroach on the subject to follow, if avoidable." I thank the Secretary for thus relieving me from the consideration of this "grave" subject, for, as a conscientious physician, having the welfare of my patients at heart, I have always desired to have as little as possible to do with undertakers, and well knowing that the whole matter will be ably presented by Dr. Rank, I can cheerfully confine my remarks to the first two divisions of my topic.

The personal observations of the Secretary quoted here, cannot help but coincide with the observations of all other physicians at all worthy of the name, in that there is often a great lack of proper precautions against the spreading of contagious diseases by physicians themselves. To be sure, dire disaster does not always follow this lack of precaution. Why it does not, only that inscrutable Providence can determine that seems to hedge about in a most miraculous manner at times, the lives of drunken men and fools.

I have seen in the limited field of my observation as a physician—and what is my small country village to this great world full of heedless and criminal negligence—a lovely family of children, the joy, the pride, the hope of devoted parents, swept to premature graves, and the four little mounds in our village cemetery stood silent monuments to the criminal negligence of the physician who diagnosed malignant diphtheria as croup, and who, from lack of proper precautions in his first case, allowed the germs of disease to run riot in that household.

The only case of scarlet fever I ever lost, a robust, stubborn little fellow of five, fell a victim to the deadly germs, wafted on the wings of a missive of love from one mother's heart to another. A lady in Lancaster, in the next county south of here, sitting in the sick-room of her two children, then recovering from scarlet fever, to while away the tedium of nursing, with disease laden hands on contaminated paper, wrote to her sister over one hundred miles away, in Wood county, where the mother

unthinkingly gave to her little man the poisoned envelope that to the child was as deadly as the distillations of the fabled Upas tree. No physician had warned the watcher of the transmissibility of scarlet fever by mail.

A physician of my acquaintence, one of those who have no fear of contagious diseases and who deride the probability of carrying infection from one house to another by means of the clothing, went to his own home from a case of scarlet fever, without any change of garments or efforts at disinfection, and in his fatherly pride took on his lap his own bright little daughter of six years of age; in less than three weeks that doctor had recorded in his heart, and on his crape laden door, the severest lesson that can be given to man on the great importance of guarding against infection.

We had an epidemic of diphtheria that arose like the fabled sphynx from the ashes of its death, by allowing the body of a child that had died, according to the doctor, with "croup, complicated with pueumonia," to be exposed to view in a public funeral; and innocent children, with that last look at their loved playmate, gathered those germs of death which ere long should reunite them in that land where mistakes are not made.

The worst case of scarlet fever I ever saw that was recovered from, was contracted while the little girl was playing out in the front yard with two playinates, who had what the doctor called "scarlet rash." "No necessity of keeping them in," "it isn't contagious," etc.

I have had two cases of scarlet fever this winter, both severe cases, brought from a village six or eight miles away, by a carpent r employed at his trade about the house, and in whose family, at home, there had occurred but recently a case of scarletina, which the attending physician had informed the father was "not nearly as catching as scarlet fever." Now, what do these cases show? I might go on and cite many more cases, the parallel of which has occurred in the experience of every physician here to-day.

I have only cited these few cases from my own limited experience for the purpose of illustrating in advance the following four items, which, if taken together and lived up to strictly, will furnish wide and deep foundations for all the precautions necessary for physicians to observe in caring for contagious diseases:

lst, Accuracy of diagnosis. 2d, an adequate sense of the vastness of the evil germ of contagion when once loosened. 3d, a thorough knowledge and appreciation of the value of sanitary regulations involved in the seven topics on our program for to-day's discussion. 4th, a due valuation of human life, and a knowledge of our responsibilities as physicians.

The program limits me to only ten minutes in which to discuss the vastness of 'these four items, hence I must hasten.

The first item. - "Accuracy of diagnosis."

For a physician to be able to take due and proper precantion against the spread of diphtheria or scarlet fever, he must first know that he has in charge such a case. To have on hand such a case, and not know it, or not to have a full appreciation of the direful consequences of its dissemination, is like placing matches in the hands of children, or a fire-brand in the custody of a madman. It has been said facetiously, "That a doctor is the only person who can cover up his mistakes." It is a sad travesty on our profession, that errors in diagnosis, necessitates the covering up of many mistakes by doctors. We hear of smallpox being called chickenpox, measles, etc., until the harvest of death changes the diagnosis, so croup for diphtheria, spinal meningitis being called malaria, etc., and the mistakes occur and their results are buried. The immortal motto of Davy Crockett, "Be sure you are right, then go ahead," should be emblazoned on the heart and conscience of every physician.

To insure accuracy of diagnosis, two things are required of the physician, and those are intelligence and a trained skill in observation. Then hasten the day when

the legislature of Ohio shall place upon our statute books a wisely devised law that shall prohibit quacks and ignoramuses from masquerading as physicians; when the proper care that every state should have for the lives and happiness of her people, will reach out with a strong hand for the ignorant and unprincipled, who tamper with human life in the broad field of medicine, as effectually as she does in the realm of mechanics, or in the depths of her mines.

Accuracy of diagnosis. No mistaking death breeding diphtheria for non-infectious croup. No belittleing the lethal powers of scarlet fever, though masked beneath the benign cloak of scarlatina. And as we remember that "to erris human," and as we are human, and hence liable to err, let us always bear in mind that there is one direction in which a physician can err with good to his patient, and a calm conscience for himself. An error on the side of caution, is "a good thing." It is better to isolate and quarantine ten cases of simple follicular tonsilitis for diphtheria, than to treat one case of diphtheria for croup. It is better to unnecessarily hang on the outer wall of life's fortress the yellow banner of contagion, than to throw wide the gates and with ruthless hand sow the dragon-teeth of deadly disease, that shall spring up armed men of death to take advantage of our negligence.

My second proposition—"An adequate idea of the vastness of the evil genii of contagion, when once loosened."

It is an old saying that "Fools rush in where angels fear to tread." The wise physician, the man of knowledge and experience, walks guardedly into the dread presence of contagion. Like the brave soldier of a hundred battles, he walks into the familiar court of death, with a full knowledge of possible consequences, but yet with the high sense of duty which is the acme of bravery.

When Aladdin touched the secret spring in his wonderful lamp, and released the gigantic evil genius, whose dark form spread like a pall of smoke over the whole heavens, he did but prefigure the careless physician who allowed the germs of contagion to pass unchallenged beyond his control.

No toil can gather together again the thistle downs which a puff of summer breeze has scattered. No zeal can call together again the germs of disease that the idle hand of negligence has allowed to escape from its grasp. Let us realize then the power and cruelty of contagion when it bursts the bonds of quarantine; it spares not the gray hairs of age, the mature calm of motherhood, the bright hopes of youth, or the helplessness of infancy. Let us learn to hold it as you would hold a viper once safely in your grasp. If called to a case of sore throat, separate it at once from the others of the family, and watch carefully its invasion. Five hours at the front end of diphtheria is worth more than an eternity behind it. A dose of strychnia one-half hour the start of you means death. Timely and prompt measures alone can save. So with diphtheria. Don't loosen its evil genii by mistake of diagnosis, delay of measures, or lack of consideration for its powers of evil. This holds good in all cases of contagion.

My third proposition—A thorough knowledge and appreciation of sanitary regulations involved in the seven topics of our program for to-day, especially those of quarantine and disinfection, so ably impressed upon us by Dr. Stutz, Health Officer, Upper Sandusky, and by Dr. Stanton of Cincinnati, member of our State Board of Health.

In those two great principles, quarantine and disinfection, shutting up and killing, lies the redemption of this world from the power of contagion. It is unnecessary for me to say more on this division of my topic, so I pass to the consideration of the fourth division.

"A due valuation of human life, and of our responsibilities as physicians," apparently two topics, but yet indivisible.

If we appreciate properly our responsibilities as physicians, how can it be otherwise than that we shall hold at their proper valuation the lives of our neighbors and

neighbors' children. It is a beautiful saying that "He who makes two blades of grass to grow, where formerly but one appeared, shall be counted as a benefactor of his race." How much more so then the physician who by his skill, his accuracy, his promptness, shall cause the bloom of life and the white banner of peace to show in the realm of contagion, where formerly death and despair reigned supreme. How must the soul of the immortal Jenner fill with ineffable joy as he views a world practically redeemed from the terrors of small-pox. In the advanced light of to-day, the great London plague could not exist. Advanced knowledge of its cause, care and treatment has brought down the death rate of scarlet fever, almost to a par with measles. When we have educated the people to study and know the proper sanitation of their water supply, and the value of pure air, diphtheria will also loose its terrors. This brings me now to the other general divisions of my topic, viz.: The precantions to be taken by ministers and undertakers.

And here I, wish to say and emphasize the saying, that all the precautions necessary to be taken by ministers and undertakers in the management of their part of the work of consigning to the grave a patient dead of contagious disease, is to be very careful and obey promptly and fully all the directions of the attending physician.

What! Does not our obligation end when the patient dies?

No! No! Not until the disease laden body shall be resting quietly in the great disinfecting bosom of our mother earth, and the sorrow stricken home been properly fumigated and disinfected, can the responsibility of the physician cease.

No carpenter must go forth from that home, with disease laden clothing to spread the scarlet fever in homes eight miles away. No mother in that home must write letters of love with death tainted hands on infected paper, which shall be as apples of Sodom in some happy home one hundred miles away. No physician, careless from his familiarity with disease or lack of appreciation of its fell power, must go as a disseminator of disease to his own home. No funeral services must gather the people into the clasp of contagious diseases. No open coffin must spread the germs of death. No children tainted by even a mild suspicion of contagion, must be allowed to greet the uninfected. All these matters fall within the province of the physician, and he does not do his full duty to himself, his profession and to his God, who does less than this

A Member—I move this convention tender the doctor a vote of thanks for his very able paper. The motion being seconded, it was carried.

The Chair—Dr. Willis C. Rank, Health Officer of the city of Newark, will now read his paper.

## BURIAL PRECAUTIONS IN DIPHTHERIA AND SCARLET FEVER.

By Dr. WILLIS C. RANK, Health Officer, Newark, Ohio.

We have discussed the cause, means of communication, and various methods of preventing the spread and ravages of these contagious diseases, but our work would fall short were we to stop here. "Eternal vigilance is the price"—of success no less than—"of liberty," and it should not relax until the portals of the grave have closed upon the body polluted by pestilential matter.

A definite knowledge of the character of a foe with which we are to do battle, his means of attack and his vulnerable points, enables us by being forearmed to meet our adversary with some assurance of victory.

When we consider that more than thirteen per cent. of the deaths of children under five years of age are caused by these two diseases, and know that in many cases infection might have been prevented, we find sufficient excuse, nay, imperative demand, for urging a more rigid observance of precautionary measures.

Isolation and disinfection of everything with which the patient has come in contact are not alone sufficient. In far too many cases, where the most approved therapeutic means have failed, the vital forces succumb to the disease, and when the physician's task is ended we have the possibilities of a future outbreak focused here. Like the shadowy figure released from the fabulous coffer of the fisherman, it may assume most monstrous and overwhelming proportions, and it will be impossible to restore it to the narrow confines from which it escaped. Death is always of repulsive aspect, but especially so when it is the result of a contagious disease; for in the tainted body itself is an added menace to the public life and health. How to dispose of the dead in such instances with the least violence to the feelings of surviving relatives, and yet, with the greatest safety to them and to others, is a question that has occupied the disciples of Hygeia from the earliest times. But it is of only comparatively recent date that a scientific reason could be given for prompt and careful precautions. These should be exercised:

First. In the preparation of the body for burial.

Second. In the privacy and dispatch with which the burial should be conducted.

Third. In the disinfection of all vehicles used in conveying the body and the representatives of the family to the place of burial,

It is desirable that in the course of time the public may be brought to look favorably upon cremation as the most proper and adequate means of disposing of such cases, for the microbe has yet to be discovered who has the reputed qualities of a salamander. But the masses of the people look upon this cleanly and efficient method of disposing of the dead with horror, consequently the duties of preparing the body for burial must devolve upon the undertaker. In order that he should do this properly, he should be required to file a certificate with the health authorities that he had complied with their regulations, namely: to destroy the poison at its origin by disinfecting the body itself. It should be bathed in a disinfecting solution, the best, probably, being corrosive sublimate, 1 to 500; the cavities of the body should be injected with a full-strength disinfecting solution, and the body then be wrapped in a cotton or linen sheet saturated with this or a proportionately strong solution of carbolic acid or chloride of lime. No woolen clothing should be allowed on the body, as it has been found that wool harbors disease germs longer than either linen or cotton. The body thus wrapped should be placed in a casket and closed, not to be opened again. The disinfection of the body should be religiously adhered to, for many epidemics have originated from failure to follow out these particulars.

If the body is to be shipped beyond the jurisdiction of the local board of health, special care must be taken in regard to the coffin and box. The coffin must be air-tight, and the contents sealed within. Particular care must be taken by the health officers, both the one who signs the permit and the one who receives it, to see that this important measure has been observed.

All authorities agree that the burial of infectious bodies should be as expeditious as possible, and should be conducted with as much privacy as the circumstances will admit. As the public becomes educated in regard to the nature of the poison in these diseases, it will become an easier thing to enforce this second precaution. No false sentiment of respect for the dead should be permitted to jeopardize the safety of the community.

Of late years much has been done in the way of burial reform, and as this reformation becomes more prevalent, the task of enforcing the speedy and private burial of infectious bodies will be much simplified.

Finally, the carriages and vehicles in which relatives and friends from the house of the deceased have attended the funeral, demand attention. In the paper on disinfection, you have seen that some time is necessary to thoroughly disinfect the clothing, rooms and houses in which these diseases have existed. It may readily be seen how easily the germs may be conveyed to the carriages, thus making them new centers from which the infection may spread. Each carriage in which representatives from the house have attended the funeral should be disinfected in a manner similar to that employed in disinfecting the house, namely, by closing and funigating with sulphur, burning three pounds to each 1,000 cubic feet of space.

Sir Henry Thompson said, in 1874: "No dead body is ever placed in the soil without polluting the earth, the air and the water above and around it." This remark has been amply confirmed by men of science in every country of Europe and America, and the pollution of air, soil and water by decomposing bodies is as well recognized as the poisonous qualities of strychnia, arsenic, or the froth of a rabid dog.

The position of this paper on the program was, probably, in the nature of a delicate recognition of the fact that "death ends all." It is to be regretted that we close with the depression of spirits necessarily attendant upon the consideration of such a subject.

Dr. Spencer—I picked up a paper which emphasizes the paper read by Dr. Rank, in reference to the shipment of dead bodies. I notice that a body had been shipped to Zanesville, and the matter has been brought before the State Board of Health. Some four years ago, you will remember, the terrible affliction that occurred in Zanesville when a member of the House of Representatives and his whole family were wiped from existence. He was a friend of mine. That occurred in the shipment of the body of a party from Chicago to Zanesville who had died of diphtheria. I see by the papers that another case has occurred.

The Chair—There are two cases of that kind; one shipped from somewhere in Kentucky and another some place in Massachusetts. We shall find who is responsible and hold them liable for it.

Dr. Calvin, of Huron—There are two or three questions I would like to ask: First, what should the board of health do when a case of contagious disease is reported on the 22d of December, and on the 18th of January the patient dies; the physician reports it as having recovered from scarlet fever and as having died from some stomach complication?

Would you regard a private funeral necessary in that case?

The Chair—I am going to ask Dr. Buechner, of Youngstown, to answer that: I think he can do it.

Dr. Buechner—They have tried that game several times with me, and I made them bury the child as having died from contagious disease. I didn't take excuses of that kind, and our present health officer doesn't either.

The Chair—Those are my sentiments.

Dr. Calvin—We had a case of that kind. On the 22d the case was reported as scarlet fever, and on the 18th of January, the child was buried;

and the physician advised the parents in favor of a public funeral, and we had to step in and prevent it. We frequently find our doctors reporting scarlet fever and diphtheria mild cases.

Dr. Kahle—I have found that a malignant case will often develop from a mild case. I think we should make no distinction between a mild case and a malignant case.

Dr. Calvin—Who is the proper person to designate whether the funeral should be private or public?

The Chair—The health officers, the health board.

Dr. Calvin, of Huron-When he receives notice of the death?

The Chair—Yes, sir. Now there are three topics before you for discussion.

Dr. Hedges—Mr. President, isn't it forbidden by a rule of the State Board of Health to ship the body of any person who has died from diphtheria, I don't care how you seal the body up or what precautions you may take? Isn't it forbidden?

The Chair—Yes, sir. These cases are a violation of our rule.

Dr. Hedges—But you can ship bodies of persons who have died of other contagious diseases?

The Chair—Of certain diseases, with proper precautions.

Dr. Reed, of Mansfield—I have taken a few notes on the paper of my friend, Dr. LeFevre, and I note one of these is the diagnosis of contagious diseases by teachers. Now, I admire the paper of Dr. LeFevre very much, but I don't think the advice the doctor gave as to having our teachers diagnose the difference between these cases is good practice. I am satisfied that the teachers in Mansfield are up to the average, but I would hate to depend upon them to know when to send a child out of school because it is supposed to be afflicted with contagious disease. I would make this rule: That when the teacher finds the child sick at school to send it home at once. It is not her province to determine whether it is contagious disease or not. All that is necessary is to send the child to the family physician or the health officer; and I think we should have no health officer who is not a physician. The next paper, on the subject of "Precautions by Physicians, Ministers and Undertakers," was an admirable paper. I don't think we can add much to it, and I certainly would not want to detract any thing from it. The last paper, in reference to precautions in burials is a very important one. The difficulty in obtaining the proper care on the part of undertakers is not to be underestimated. The undertaker is simply a business man who conducts his business because there is money in it; and anything which interferes with the money in his business he is opposed to; consequently, when we adopted the rule that undertakers had to get permits before they could bury, we had a row, a good round fight; but we are on top and propose to keep on top. One undertaker undertook to break the rule, and when he was notified by the health authorities to observe a

private funeral and not to remove the child from the city, he violated the rule and took the child to a city some thirty or forty miles away, notwithstanding we had telegraphed to Secretary Probst to get his instructions and he telegraphed back that he should not; yet before we could get the telegram there he lit out with the corpse. I don't know whether there has any injury come of it or not, but the principle is the same and we arrested him and found him guilty, and fined him in the lower courts. It was taken to the upper courts, and unfortunately the case was remanded back for trial; but we established the fact that that was a misdemeanor, and it don't make any difference whether there was a technicality in the trial or not, we found him guilty of a violation of the law. I think that health officers should be strict in their rules in reference to this matter. An undertaker may have three or four funerals at the same time, and he goes to a house where he has a funeral of a person who died of scarlet fever, and then he goes to the funeral of a person who died with consumption or some other disease, and he goes without any disinfection and takes no precaution. We, of course, require them to bury as soon as possible. But you will constantly be drawn on to extend the time of the funeral, and to allow time for the friends to get there. I think it is the proper thing for health officers to shut down on them.

Mr. Lang—The doctor made the statement that all health officers should be physicians. We will grant it; but what are you going to do under some circumstances? We are living in a town of two thousand inhabitants, and no physician will accept the place. The reason they assign is that it ruins their business. You have to come in contact with the attending physician of the patient more or less, and, of course, in our town these physicians do not always dwell in harmony. Now that is the condition of affairs. Now, I am not a practicing physician, but I am the health officer of the town, and I make it a point to work in harmony with the physicians as much as possible, and I have no trouble in getting along with them. I don't pretend to know anything about medicine, but the attending physician does know and I act on his suggestion.

Dr. Spencer—I think that as far as practicable the health officer of every community should be a physician, and he should be from one of two classes, either those independently rich or those independently independent. I belong to the latter class, as health officer of our town; and if I say that a child shan't go to school it dosen't go. If I say there shall be no public funeral there is none. I am independently independent, and I have the board of health behind me. The people of Ohio are rising to a realization of the fact that the efforts of the State Board of Health and local boards are for their benefit, and that the lives of a half dozen children are worth more than this will cost, and more than a dozen such meetings as this will cost. As health officer of our town, I instruct our superintendent of schools to send every child home as soon as it begins to complain, and especially if it is apparently a cold or sore throat

that the child has. In reference to burial precautions we are strict in allowing no public funerals or exposure of the body either at the house or at the church. We allow no funerals in church or public place in cases of contagious disease. They are held from the house without any additional friends or children, especially, and no exposure of the corpse is permitted.

Mr. Clarke—I rise to ask a question. Our health officer is a physician. We have had a case that the attending physician has said is diphtheria. He notified the health officer, and the health officer went down there and said that it was not diphtheria. About two years ago we had an epidemic of diphtheria there. Some of the physicians said it was not diphtheria and some said it was. Three or four children died, and I think it would be better if we had had no physicians and health officers.

Dr. Sutton—I just want to relate a little experience which I had in Zanesville not long ago. A child had died of scarlet fever, and I was notified by the undertaker that the child had died of scarlet fever. I was also notified that the parents did not desire to bury the child within twenty-four hours. I said to the undertaker, the child must be buried within twenty-four hours or we will have the man arrested, and, of course, we hated to do that because he was one of our first citizens and one of our first men. He went to the man and said: "You will have to bury this child this evening, and the health authorities say that they will have you arrested if you don't." He said: "Just let them have me arrested. Let them fine me as much as they want, if it costs me half as much as I am worth, but I won't have my little daughter buried until to-morrow." He was arrested and fined and went down and paid his fine. What can you do with a case of that kind?

Dr. Reed--In answer to the two questions that have been asked: The state laws of Ohio say that the local boards of health shall have the interests of the health of the community in hand. They have the right to go and take the corpse and bury it in spite of the man, and let him come on them for damages. They can take the stand that this injures the health of the community, and that a man has no right to endanger the health of the community. It is just the same as you can condemn a man's property, and the same law would hold good in this case. If a man interferes with a board of health in carrying out these instructions you can have him arrested and put in jail and go on with your funeral, and let him bring a prosecution. I think a health officer should be a physician; and if they are so unfortunate as to have a fight among physicians, which usually occurs in towns and cities, they can secure some person who is capable of doing this work, and he should decide whether diseases are contagious or not. If he decides a case is not contagious he can be held responsible; and if he decides a case is contagious which is not he is only following the rule of railroads—"in doubt take the safe side."

A Member—I feel it my duty to say a word in behalf of the undertakers. If he who spoke against them has a funeral director in his town who is not a gentleman, I am sorry for the funeral director. If there is any person that should be one it should be the funeral director. He comes into the house when the heart-strings are broken. Now, I am a funeral director, and I am here representing our city in the capacity of health officer. Any funeral director who will not disinfect a body for his own preservation and his family is not doing his duty. I have never yet found a time when I could not talk and reason with the family that it was best for them to bury the body as soon as possible. I have never had any trouble in that direction. I don't think it is best to quarrel over the matter at that time if it can be avoided.

The Chair—Gentlemen, the time has come when we should adjourn this session. We will meet at 7 o'clock.

## SECOND SESSION.

THURSDAY, 7 P. M., January 25, 1894.

The convention was called to order by Dr. Hoover, who addressed the convention as follows:

' I am sorry to say that Professor Nelson is called home by a telegram saying that his father is worse.

The first paper on the program for the evening is Dr. Buechner, on the subject: "Are cemeteries likely to create unsanitary conditions in their respective neighborhoods?" Is Dr. Buechner in the room? I believe the doctor is not present. Shall we proceed with the next paper on the program?

A Member—Mr. Chairman, I move that we proceed.

The Chair—I am sorry to say that Dr. Wise is not here yet. So that carries us to the third number on the program for the evening, on "House Drains," by Dr. R. D. Kahle, of Lima, member of the State Board of Health.

#### HOUSE DRAINS.

By Dr. R. D. Kahle, Member State Board of Health, Lima, Ohio.

Under this head will be considered those appliances for the removal of waste water, slops, and excrementitious substances produced in a house, and not the ultimate disposal of it either by sewers, cesspools or on the land. We will treat of the water-carrying system and not of any dry system.

House drainage is the first and most important link in a good sewerage system, and as great accuracy should be required in laying out house drains, as in laying out a system for a village or city, in fact, absolute precision should be required.

The water-carrying system by means of earthen and iron pipes is used very largely in removing the liquid waste from the kitchen and slop sinks, water closet, urinal and bath tubs.

The object of drains is the removal of the liquid waste products from a house rapidly and completely, which if not properly done will produce sickness and an increased mortality. There is no doubt but that defective drains may be and often are the means of admitting filth diseases into the house.

Drains were formerly made from brick or stone and were frequently square instead of round. The square drain is least adapted to the rapid or complete removal of the liquid waste of a house, and are not easily flushed. They were generally made larger than necessary and were subject to frequent obstruction from the accumulation of solid matter, as a drain of this kind will not readily clean itself. A drain should be egg-shaped or round and perfectly smooth inside. Neither an eggshaped or a round drain are easily obstructed and are readily cleaned by flushing.

One of the most important questions in treating this subject is to reduce the cost to the minimum in the construction of first-class work. Each year adds new means of treating the sewage economically and the improvements have been carried so far that it is impossible to recommend any one system to the exclusion of all others; the simplest are very often the best. The number of pipes should be as few as is consistent for the use intended. First-class workmanship should be re-

quired in all cases.

The soil pipe should be of iron, either cast or wrought, and four inches in diameter. It should be carried full size to a point above the roof where it should have a free opening for the escape of gases, and it should pass several feet beyond the cellar wall before it enters the ordinary sewer pipe where a trap should be placed. Too large a soil pipe is frequently used. A four-inch pipe is large enough for a moderate sized house; a six-inch pipe for a very large house or mansion, and a nine-inch

pipe for large blocks and institutions.

The area of a four-inch pipe is 12.56 inches and that of a six-inch pipe 28.27 inches, while the area of a nine-inch pipe is 63.61 inches. What would fill a four-inch pipe would not half fill a six-inch pipe, and the flushing power would be reduced in proportion. A four-inch pipe with a fall of one in forty-one will give a velocity of four and one-half feet per second, and discharge 144 gallons per minute running full. No rule can be given for the fall or inclination of a drain for that will depend upon circumstances in each case, but the fall should be a regular one, and at least one foot in fifty to secure flushing without special flush tanks. House drains should be so arranged that they will be flushed by the fixtures in use, and not require special flush tanks for that purpose. Drains should be laid as far as possible in straight lines and curves should be made of pipes curved at the proper degree. It is sometimes advisable to use curved channel pipes, i. e., pipes divided longitudinally in half, so that in case of obstruction the interior is readily accessible. Where they pass through important rooms they should be concealed by movable panels hinged like doors. House drains should always be easy of access and where possible exposed to view. When a house drain discharges into a sewer that is liable to flooding it is necessary to provide a tide valve between the sewer and drain. The ball valve is probably the best. No drain ought to be laid under a house when it is possible to lay them on the outside. When a drain passes under a house to reach the sewer extra precautions should be used to prevent the escape of air or water from entering the coil under the house. Iron, instead of stone pipe should be used in such places.

More or less waste matter will accumulate on the sides of waste pipes and sewers which will be fouled by decomposition, and the gases thus created will rise to the highest point in the pipes; in order that it may promptly escape, vent pipes are used to carry it above the house. The drain should be open at both ends, so that a

free circulation of air will be maintained through every part of the drain and soil pipe. This may be done by a properly constructed trap where the drain enters the sewer, and before it leaves the premises for the public sewer.

Drains should be air and water-tight, and before being used should be tested. The outlet may be closed and the drain field with water; if there is a leak it will be made apparent by a fall in the level of the water; or the peppermint test may be used. This test is made by adding two ounces of essence of peppermint to a gallon of hot water and pouring it into the opening of the outlet of the soil pipe; if there is a leak, it may be detected by the penetrating odor of the peppermint.

One of the most essential parts of a house drain is the trap. The object of the trap is to exclude the air from the house drain and the house, the latter being the more important.

A trap should be so constructed that it will prevent the breaking of the water seal by siphonage, evaporation, back prossure, capillary attraction or leakage. And it should be so constructed that sediment will not accumulate in it. They should be placed close to the fixture and be readily accessible.

Most traps have an opening at their highest point for the attaching of vent pipes.

The water seal of an ordinary trap can be broken by siphonage if the pressure or air on the side of the soil pipe of the trap be diminished, as it often is by the discharge of another fixture into the same soil pipe, or by increased pressure the water may be forced into the fixture and the air into the house. By providing a free entrance and exit of air to the trap this break of the water seal may be prevented.

The ventilating of a trap furnishes means for the evaporation of the water seal. Numerous traps have been invented to overcome these difficulties. Vent pipes are condemned by some engineers as being expensive and unnecessary, and traps that cannot be siphoned used. There are numerous traps that cannot be siphoned, some of them are quite elaborate, and but little danger of the water seal being broken by evaporation. The D trap, the various pot traps, the bottle and globe traps are objectionable on account of being a receptable for the accumulation of filth. They do not readily clean themselves, and filth will adhere to their sides and corners, while the various valve traps are liable to lose their water seal by filth adhering to the valve and preventing complete closure.

The S trap, ventilated, and with a deep water seal will usually answer all purposes, and is a trap that will scour itself by the discharge of the ordinary fixture.

#### WATER CLOSETS.

There are five kinds of water closets—the pan, vaive, plug or plunger, hopper and washout closets.

The pan-closet is one of the oldest, and has been very extensively used; it is found in a large number of the older residences. It is poorly constructed from a sanitary standpoint. It consists of an inverted cone, under which is a shallow pan containing a little water in which the dejecta is received. On raising the handle the pan is swung back into the container, allowing the contents to pass into the trap or soil pipe. This form of closet is rarely clean. The space in which the pan moves, the container, is a receptacle for the accumulation of foul matter which makes it objectionable.

The valve-closet is a modification of the pan-closet. A valve is used instead of a pan, which is held in place by a weight. By raising the handle or lever the valve is opened, allowing the contents of the basin to pass into the container. It is but little improvement on the pan-closet.

The plug or plunger-closet is an improvement on the pan or valve-closet. The outlet of the basin is generally at one side and is closed by a plug, while the basin

is partly filled with water which is swept out when the plug is removed. This closet frequently becomes quite foul.

The hopper-closet consists of a deep inverted cone with a water-seal trap directly underneath, which is known as the siphon trap. The excreta drops into the water of the basin, and when the water is turned on the closet is thoroughly washed. It has no hidden parts and is easily kept clean, and is one of the best for general use.

At the present time the washout-closet is probably used more than any other. They are of various shapes, and so constructed that a small quantity of water remains in the basin to receive the excreta, which is flushed out of the basin into a siphon trap below. This is a good closet, but does not present any advantage over the hopper-closet. They are generally noisy when in use and require considerable water to flush them properly.

The Chair—Gentlemen, the paper is before you for discussion. If there is not any discussion we will past on to the next paper. The next paper is "Sewerage Disposal at Canton," by Mr. Josiah Hartzell, of Canton, member of the State Board of Health.

## SEWERAGE DISPOSAL AT CANTON.

By Josiah Hartzell, Member State Board of Health, Canton.

Mr. Hartzell—Gentlemen, several things I must say in justice to myself; and in the first place I am not an engineer, nor a sewer expert, nor an expert in the erection of sewerage disposal works. Also, I am not a public speaker. I have neither experience, especially in extemporaneous speaking, nor aptitude. I think it is only justice to myself to say this so that I shall not bear the reproach of having put myself forward as an expert or a speaker.

I am here for the purpose of explaining, as well as I can, the manner in which we purify the sewerage effluent of Canton before delivering the same into a stream. Canton is a city that boasts of 32,000 inhabitants. The site of the city is bisected, or rather trisected, by two branches of the Nimishillin creek, flowing from north to south, and also by Shriver's run, which empties into one of these creeks. These depressions divide the city site naturally into three sewer districts. Cities can be sewered as a whole, providing that all the waters in the city come together to one general main; or we can divide the city for purposes of sewerage in o three sewer districts, or as many as nature has already divided it into.

I must speak a little regarding our sewers, because they bear a very close relation to the manner of disposal which we were going to adopt. The system we have adopted is the separate system, and it is strictly the separate system, for it admits no roof water, no rain water, except as I shall explain with regard to the flush tanks.

The main sewer is twenty inches in diameter, a sufficient diameter to carry off the sewage, if nothing but house waste were admitted, for a city of 50,000 or 60,000 inhabitants; and the lateral sewers are of diameters from 20 down to 18, 15, 12 and 10, and down to 6 inches. Now modern engineers, many of them, have been recommending no smaller size than eight inches; but we have found no trouble with these six-inch sewers, and they answer every purpose.

The characteristic feature of the separate system is the flush tank. At every dead end there is a flush tank. There are sixty of these, mostly of the Rhodes-Williams pattern. They are filled by a trickling stream of water in from eight to twenty-four hours, the difference being explained this way: If there are a number of house connections on the upper part of the tank, we can postpone the setting off

of the flush tank for twenty-four hours; but if there are few flushings from the houses, we time them so that they empty themselves, siphon themselves out, in eight hours. Of course, they take all the intermediate time to fill. When siphoned out, they go out with a rush and scour out the sewers. The manholes are situated at the street intersections, so that by lifting any manhole lid you can look down and see the conduct of two or three sewers at the same time.

The sewers of Canton have been in operation six years. I must add one words which may sound a little like boasting, but is a fact, that during those six years there has been no odor, and no complaint, and nothing but complete satisfaction during the whole time. The sewers have been built six years, but the sewage disposal works have only been built one year.

Before we were permitted to lift a shovelful of ground we were compelled to settle one question, and that delayed the inauguration of the sewer work for a number of years, and that was, "What are you going to do with the sewage?" The only place the sewage could be emptied into was the Nimishillin. In every city the sewage must go somewhere. It must follow gravity and go into some stream. Our creeks, I am bound to say in the beginning are beautiful streams. They have a very constant flow in summer. They are supported by springs, and along their banks are some of the finest farms in the region round about. Of course the riparians below the city made great objection. A great many of them have their houses built along the creek, and they objected to the sewage flowing down over the riffles and lodging on the rocks, and making a nuisance; and the people in the city also were opposed to it, as many of them had property there, and the sewer commissioners also were opposed to it if they knew how to avoid it. At that time we had no recourse to any such thing as a State Board of Health, and there was no sewage disposal works anywhere in the United States, except at Pullman, Ill., and that was by the irrigation process. These citizens below held meetings time after time, and they raised \$250,000 of a guarantee fund for the purpose of dragging us into court. So we had to face the music. We knew we had to do something. We knew perfectly well that we were going to be compelled to introduce some works for the purpose of purifying the sewage.

Fortunately for us, about that time the city of Providence, R. I., was in very much such a hole as we were in regard to their sewerage, and they had seut a competent man, Samuel M. Gray, engineer, to inspect the sewage disposal plants of Europet and he had returned and published his work, which is to-day the best standard work on that subject that I know anything about. Naturally, we looked toward Mr. Gray, and we sent for Mr. Gray to come to Canton to help us out of the dilemma. He came and inspected and made us a report, in which he proposed three methods by which the sewage might be disposed of. First, by intermittent filtration, which would cost about \$150,000, with about \$4,000 a year annual maintenance; second the broad irrigation system, which would cost \$50,000, with about \$8,000 annual maintenance; and third, the chemical precipitation plan, which would cost us about \$35,000, with an annual maintenance of about \$3,500. He recommended as the best adapted to our city, the chemical precipitation plan.

That was about ten years ago, before we commenced our sewers. But, for the purpose of starting in with our sewer system, having obtained the legislation and the consent of the council, we adopted the chemical precipitation plan. We only built the plant during this last year, and between the time that Mr. Gray made his report and the time when we commenced work, quite a number of sewage disposal works had been built in the United States. Therefore, the city council, for the purpose of being ready, appointed a committee consisting of a member of the council, the engineer of the city, and myself, to inspect all the sewage disposal works we could reach, for the purpose of ascertaining whether our plans could be in any way modified for the better. We visited first Worcester, Mass., where about

6,000,000 gallons of sewage a day are being treated in a very satisfactory way, so far as the effluent was concerned. They had a very clear, nice looking effluent, the disposal of the sludge leaving a good deal to be desired, however. The sludge was carried off into pockets of a swamp about one hundred feet square, and was emptied first into one, and then into another, giving intervals of about nine days, the idea being that the water in the sludge would evaporate; and then they shoveled up the sludge and burned it. But since that it has turned out that it is quite a nuisance, besides being very troublesome and expensive; and they are about to adopt some plan to remedy this.

We then visited a number of sewerage farms and filtration works on a much smailer scale than Worcester. At Worcester it was on a large scale, and I don't see why the city of Columbus, being about the same size of the city of Worcester, cannot introduce the purification of sewage by chemical precipitation. Certainly, the capital of the state ought to be interested, and ought to set an example to the cities of the state in cleanliness and decency in this matter.

We visited the purification works at Orange, N. J. They spent about \$150,000 on their buildings alone, because this plant was right in the city—a square right in the city. These buildings, instead of being an advantage, were a solutely a disadvantage, and created a nuisance, because the tanks were covered by the buildings, and the confined air space created a nuisance; and the press room and everything connected with it at the time we were there, was liable to the same imputation. It was a disagreeable place. We ascertained before we left there that the principal trouble was local politics, and I think a good many people here will say that if there is anything that will outstink sewage it is local politics.

When we returned home we had about the same ideas as when we left home, except that we derived some benefits from Worcester, Mass., and introduced certain modifications, which we derived from the experience of the engineers at Worcester.

Now, I have said this much by way of introduction, and I hope by the aid of a blackboard, to give you something of an idea about the manner in which we treat our sewage in order to put the effluent into the stream in such a manner as not to create a nuisance, and to shelter us so far as legal prosecution is concerned, and give satisfaction to the people down the stream and to the people in the city.

[The speaker then explained the method of operation at the Canton sewage disposal plant, using the blackboard for the purpose of illustration. A full report was made by the stenographer, but as the speaker's remarks had referred to the diagrams which he drew on the blackboard their meaning would not be obvious to the reader without a tracing to accompany them, and unfortunately we have no engraving at hand to print from. A succinct explanation of the system is here condensed from the latest report of L. E. Chapin, city engineer:]

The plant consists of a heavy frame building on a brick foundation, containing a boiler and pump-room, lined with brick, twenty-eight by thirty feet in plan; a chemical mixing and press-room thirty by forty feet, and a chemical store and slacking room thirty by forty feet, located above the mixing-room. The four precipitating tanks being each fifty by ninety-six feet in plan, and when filed having an average depth of four and seventy-five hundredths feet; the sewage being three feet ten inches deep in the shallowest portion, and five feet nine inches in the deepest parts. The capacity of each tank is one hundred and seventy-one thousand and one hundred (171,100) gallons.

The machinery consists of a horizontal duplex "Voisard" sludge pump, having steam cylinders seven and a half inches in diameter, with five-inch plungers and ten-inch stroke, with suction-p pe connectious, arranged so as to take sludge from

the sludge cistern or clear water from the clear water well, and discharge connections such that the sludge may be forced into the filter press or through a line of two and a half inch pipe outside of the building to a sludge gravel bed, or pump clear water from the clear water well to an overhead storage tank within the building,

The feed pump being a duplex 4½x3x5, is arranged so that it can be used for boiler feeding or for filling the overhead supply tank, or for pumping water under pressure for cleansing purposes about the building, and for washing down the sides of the tanks after the sludge is removed.

The steam plant consists of a horizontal tubular boiler fifty-four inches in diameter and twelve feet long, set in a substantial brick setting with full arch front, and having a wrought-iron smoke-stack fifty-three feet in height. The chemical mixers are of wood, elliptical in form, having diameters five by nine feet, and are operated by an automatic vertical engine. The filter press is a sixty-section chamber "Bonnet" press, each chamber being twenty-nine inches in diameter and equipped with rubber gaskets to obviate the tearing of the filter cloths, and has a traveling head with a hand-tightening gear and quick opening arrangment, with the necessary relief valves, blow-off connections and air chamber.

Within the slug cistern is located a No. 5 Pulsometer pump, having connections so arranged that it can be operated from the boiler-room, lifting the sludge from the cistern and discharging it into either an open tank located outside of the pumping-room, or through a line of two and a half inch pipe onto a sludge gravel bed. The pump is designed to be used as an auxiliary to care for the sludge at such times when the sludge forcing pump should be in need of repairs. From the sludge in this open tank the supply can be had by gravity to the suction chambers of the sludge forcing pump, in case the suction lift without foot valve should at any time prove hard to maintain.

Water for all steam and mixing purposes is had from the effluent channel, and is pumped into an overhead storage tank holding two thousand two hundred gallons, from which it is drawn as required.

#### TREATMENT.

The sewage is diverted from the main sewer at a manhole just above the city farm into the inlet sewer, which enters the building at one end of and under the boiler-room floor, there enlarging into a screening chamber provided with gates and screens for the removal of obstructionable matters, and thence possing through an inlet channel four feet in width, to the four tanks located outside of the building. The lower end of this inlet channel connects with a double circulating channel, located midway between the tanks; there being two precipitating tanks on each side of this circulating channel.

At the point where the sewage enters the building it receives a charge of milk of lime from the lime mixer, and where it leaves the building a solution of sulphate of alumina is added. The sewage then passing down the inlet channel is agitated by baffle-boards within the channel, insuring a thorough mixture of precipitating agents with the crude sewage before entering the precipitating tanks. On reaching the precipitating tanks, the sewage so charged enters the first tank passing through the further end, is deflected back and re-enters the circulating channel, from which it enters the second tank; and thence by the same method of circulation into and through the third and forth tanks to exit over the aerating steps of the effluent chamber; and thence into and through the affluent sewer to the point of outfall in the Nimishillin creek.

The chemicals used, lime and sulphate of alumina, are delivered by wagon into the second story of the mixing-room, and there stored in their respective bins. The proper charges of lime are weighed out at regular intervals into a slaking tank located on this floor, which, after being slaked with a large surplus of water, is passed through into the lime mixer below on the first floor; while the sulphate of alumina, weighed out in the requisite amounts, is dumped directly into the top of the chemical mixer, also on the first floor, sufficient water being added to both the lime and alum solutions to facilitate the easy and uniform discharges into the crude sewage.

These lime and chemical mixers are elliptical in plan, having diameters five by nine feet, and being seven feet in height. Each mixer has two vertical shafts, carrying beater arms and revolving at the rate of about twenty revolutions per minute, for the purpose of maintaining a homogeneous mixture. From these mixers, by means of two-inch discharge pipes controlled by gate valves, the proper amount of chemicals is easily and uniformly regulated, the agitating power being obtained from a sixteen horse-power vertical engine, driving the mixers by belting.

The precipitation process is such that approximately fifty per cent. of the suspended matters taken out is deposited in the first tank; about twenty-five per cent. in the second tank, while the balance is evenly distributed in the third and fourth tanks. From these tanks the sludge is removed three times a week from tank No. 1; twice a week from tank No. 2, every five days from tank No. 3, and once a week from tank No. 4. This method of sludge removal gives, by experiment, a uniform daily amount of sludge for pressing, and the best results in precipitation.

To remove the sludge from the bottom of each tank, the tank to be so cleansed is cut out of circulation, the sewage passing by and into the other three tanks in rotation. After standing for some two hours the supernatant water from the tank so cut out is decanted by means of a floating skimmer pipe into a clear-water sewer lying beneath the circulating channel and discharging under the lower steps of the effluent chamber, and thence into the effluent sewer. When the floating skimmer pipe reaches the accumulated sludge in the bottom, it is raised to the surface; then, by means of a twelve-inch gate valve the accumulated sludge is drawn off into a sludge sewer, also located under this circulating channel, this sewer discharging into a sludge cistern beyond the tanks and just outside of the pumping room. From this cistern the sludge is lifted by the suction of a duplex plunger pump having ball valves, and forced into a sectional filter press, under pressure of about one hundred pounds to the square inch. From this press the exuded water passes out through the filter cloths and into a gutter beneath, and then through a drain to the inlet sewer, the solil matters being retained in the form of cakes within the press, and when the press is emptied the cakes fall into a car below. This car, when full, is ran out of the building on a track, passing across the tanks by a bridge to the sludge cake dumping ground.

The quantity of chemicals used have been about eight grains of lime and about one and six-tenths grains sulphate of alumina per gallon of sewage treated. The use of this amount of chemicals gives a very satisfactory effluent, due to the large capacity of the precipitating tanks. And as the quantity of sewage to be treated increases as the other districts are sewered, a larger amount of chemicals can be added, maintaining an effluent satisfying all present and future requirements.

Should the creek water be used as a public water supply, the effluent from the works can be further treated without pumping by intermittent fitration on the city's lands adjoining the works on the west side. The absence of any suspended matters in the present effluent would enable a comparatively large amount of effluent water to be applied per acre to the land prepared for intermittent filtration.

## QUANTITY OF SLUDGE.

The total daily amount of sewage averages eight hundred and eighty thousand gallons; from which is obtained approximately four tons of sludge cake per day.

The raw sludge as it is drawn into the sludge eistern contains approximately ninety-five per cent, of water, and the cake obtained from filter pressing approximately fifty-eight per cent, of moisture. About four presses of sludge per day are obtained, each press making sixty cakes of an average weight of thirty-three and one-third pounds.

Up to the present no attempt has been made to sell the sludge cake, but no difficulty is had in having the cake promptly removed from the dumping ground by farmers desiring it for tertilizer.

The average time in running out a press of sludge cake is approximately two hours, which includes the filling of the press, the emptying and the locking up of the press ready for refilling. The same operation, however, has been done in fifty-five minutes' time, the rapidity of operation depending upon the texture of the filter cloths, a closely woven jute material of about fifteen threads to the inchbeing found most satisfactory although not as durable as a canvas having forty threads to the inch, as is at present used.

The life of canvas sacks approximates two months or two hundred presses, while the life of jute sacks run somewhat less, depending upon the character of the sludge, and also largely upon the diameter of the central openings through the filter chambers; the larger openings giving less resistance to filtration and much better service. The use of a applex pump in filling the filter press has so far proved highly satisfactory. The pump being equipped with ball valves of hard rubber, passes freely large amounts of thick and stringy matters without the slightest choking, and responding, promptly to the varying requirements of the press for sludge.

#### MAINTENANCE.

The monthly expenses for maintenance are as follows:

One engineer in charge of the works	\$60	00
One helper		
One night engineer and watchman	40	00
Twenty tons of coal	31	00
Fifteen tons of lime	42	90
Three tons of sulphate of alumina	-60	-0(
Oil and waste	8	00
Filter cloths	10	ÜÜ
Miscellaneous	3	10
Total	~······	

Or three thousand five hundred and forty dollars per year, being twenty-three and six-tenths cents per capita sewered per year on a basis of fifteen thousand people being connected with the sewers, or a total cost of eleven dollars and nineteen cents per million gallons of sewage treated.

The total annual expense for an increased amount of sewage would be practically the cost of lime and alumina; the attendance, coal and other supplies being the same.

During the winter months and at times of freshets and high water, chemical treatment will be entirely omitted, sufficient help being retained at the works to properly care for them, and in this manner effect a material saving over the annual expense above named, only sufficient sewage being passed through the precipitating tanks to protect them from frost.

#### TEMPERATURE.

The lowest observed temperatures of the sewage at the outfall in the coldest weather of the winter of 1892-93, was forty-six degrees. Fahrenheit, at a time when the city water supply was at a temperature of thirty-four degrees.

The lowest temperature observed during the recent cold weather, when the temperature of the external air was at sixteen degrees Fahrenheit, was fifty degrees for the sewage at the mouth of the inlet sewer; forty-eight degrees where it enters tank No. 1; forty-nine degrees at the farther end of tank No. 1; forty-seven degrees in each end of tank No. 2, and also tank No. 3; forty-six degrees in tank No. 4, and forty-five degrees at the effluent water at the foot of the aerating steps, showing a total loss of temperature of five degrees in the passage of the sewage through the tanks.

On the basis of the same decrease in temperature for the colder weather in the winter when the temperature of the external air stands below zero, it is unlikely that the temperature of the effluent for continuous circulation will fall below fortyone or forty degrees Fahrenheit.

#### CHEMICAL PROPERTIES.

Several analyses have been made of the sewage and effluent, but the couditious under which the samples were taken were such that the result obtained by analysis so far taken has not shown the true working of the plant. The range of samples being over too limited a period of time, and a longer time than is desirable intervening between the collection of the samples and the analysis of the same.

Generally speaking, the analyses show that with lime alone at the rate of eleven hundred pounds; er million gallons of sewage, fifty-nine per cent. of the organic matter contained was removed by the process of treatment. No analysis has been taken of the effluent since the use of sulphate of alumina in addition to the lime

The indications so far as one can judge from an inspection of the effluent, is that by the addition of two hundred pounds of alumina per day, a much higher degree of purification is attained. The analysis of the lime used shows:

Total calcium oxide	84.7 per cent.
Magnesium oxide	1.5 per cent.
Ferric oxide	5.8 per cent.
Moisture, carbonic acid and undetermined	8.0 per cent.
Total1	000 per cent
Lime soluble in water.	^

This is a local lime, costing delivered in the bin of the works ten cents per bushel of seventy pounds.

The sulphate of alumina, so far used, is represented as containing insoluble matter, ten per cent.; sulphate of alumina, forty-four per cent.; and costs in a pulverized condition in car load lots delivered at the works, about twenty dollars per ton.

Investigations are now in progress to determine the suitability of other grades of sulphate of alumina, with the idea of obtaining that most suitable for the process at the lowest cost.

The works, as completed and operated, have continued to be highly satisfactory to the citizens of Canton and to the riparian owners of the lower creek valley; and no odors of any nature are discernible at any time about the plant; and the authorities are well satisfied in the adoption of chemical precipitation for the disposal of house sewage.

It will be well to keep in view the lessons that have been written for us by the older countries. We may rest well assured that the municipal sanitary negligence which has necessitated costly purification experiments in Germany, and has resulted in the organization of the Rivers' Pollution Commission in England, will

very shortly induce the exaction of similar reforms on the part of our more intelligent communities. But we do not have to cross the ocean in our quest for wholesome examples. In her methods and development of the broad subject of sanita tion—as in her development of certain other ideas, about the year 1776—the Old Bay state has led the way. Municipalities, contemplating the introduction of sewers or water-works, may consult her State Board of Health. They may provide plans, and may submit the same to the board for approval—not only may do so, but must and shall do so. With all these safeguards infallibility will not have been attained. In these fields the evolution is not complete. But if the best possible results are reached, and dangers to comfort and health and line have been reduced to the minimum, a great point has been gained. Recent legislation has conferred powers of a similar character upon the State Board of New York state.

In that wide area of country bounded by New York state on the east, and those arid western states where irrigation is practiced for the profit there is in saving the water, there would seem to be only one example of a purification plant in active operation, namely the one at Canton, Ohio. But this state of things cannot last. The examples that have been set, not only by cities but by villages of a few thousand inhabitants, and the concomitant advantages accruing from purification, will be studied and will be contagious. Since the plan employed in Canton has been made public our city engineer has been besieged by inquiries. More engineers are engaged upon purification works at the present moment than ever before.

Fifteen years ago there were very few sewered towns or cities, outside of a few of the largest cities. Now the unsewered towns, of any size, are the exceptions. For these healthful changes we have to thank, first, the growing interest of the people, coupled with their appreciation of the sanitary and commercial advantages of sewers; and, second, the genius of Waring and others who devised separate sewers, and who had the courage to illustrate their efficiency, thus removing the financial difficulties which were a bar to the introduction of the costly, old-time systems.

It is not likely that the introduction of purification will make such a quick headway as did sewer building. Those directly interested are less in number and power. But they have the law on their side—the law in every civilized country must necessarily be on their side, for it is the law of justice, decency and self-preservation. And as stream pollution intensifies they will see afflicted municipalities coming to their assistance. Youngstown will protest against drinking Warren's sewage; and Youngstown's turn will come next. Circleville will clasp hands with the other riparians, and Columbus will be invited into court, and the wave of reform once started will roll down the Scioto to its mouth.

The inauguration of a new work is a critical period in the life of a city. Family considerations, politics, a smooth plausible tongue, have been known to open the door to almost irreparable injuries. In a certain town in Ohio the engineer carried the main sewer, full bore, up a long hill to the last possible house, and to a point where the ground pitched the other way. In another place a street railroad was being built. One man-hole came between the tracks, another under one track, and others still under the other track. On lifting one man-hole lid the sewage was seen to flow in a shallow stream; in another the sewer was nearly full, and the flow sluggish. Communities that have suffered from such incompetency are to be commiserated.

In 1870 Canton built water-works comprising rotary pumps, which forced the water through many miles of sheet iron, cement-based mains. In 1880, only ten years later, the rotary pump had given place to steam; every foot of cement pipe had been dug up and iron pipes laid down, and the source of supply had been changed. The costhest ingredient that can be employed in the apbuilding of a city is incompetent engineering.

And now I come to speak of duties which it seems to me should devolve upon the state in relation to these enterprises. Had such laws as those of Massachusetts and New York been in effect in Ohio, the blunders, and waste, and disappointment referred to would not have occurred.

One source of water supply is good, one is dubious, one is bad; plausible hypotheses, conflicting drains, embarrass the men of affairs who constitute the people's board. Joyfully they would, or should, hail the privilege of recourse to a wisely constituted, disinterested authority, maintained and perpetuated by the state, with an eye single to the welfare of the public.

The city may be limited to a single water-course as its only possible supply. The supplying mechanism may be built, perhaps, with filter, perhaps, without. And, perhaps, to-morrow a crude sewage effluent is shot into the stream from some town or county higher up. Should not the sufferers have an appeal to the state? Will an effort be made to save the streams? Or may all the water courses in Ohio be converted into sewers?

The Chair—This is one of the most important subjects engaging the attention of health officers at the present time. There is not a stream of any size in Ohio to-day that is not grossly polluted, and many of them furnish the water supply of towns and cities. I have been more than interested in this, and I hope we will have a lively discussion on the subject.

Dr. Reed—Mr. Chairman, before we enter into the discussion, I move a vote of thanks to Mr. Hartzell for this very entertaining and instructive address on sewerage.

Motion being seconded, unanimously prevailed.

The Chair—Gentlemen, have any of you any remarks to offer on this subject?

Dr. Reed—This is a subject that should interest every village and city in the state of Ohio. The fact that the law of the state of Ohio prohibits emptying sewage into streams should interest us all, for the reason that we are liable as cities to be sued for doing so; and we should be sued if we do so. The fact that there is a way by which this sewage can be cleansed, in other words, that a precipitate can be made and the water returned to the stream in a harmless condition, is sufficient evidence to a body of this kind that we should take measures to prohibit the wholesale discharge of sewage into the streams. We have had that matter to contend with in Mansfield. We constructed a sewer a few years ago, and against the better judgment of many of the citizens it was turned into a small stream which flows through the southern part of our county, and it destroyed the fish and made the stream absolutely a nuisance for many miles below the city. We had no recourse; but we have learned since that "the world do move," and that we have a method by which the sewage can be precipitated. As it is to-day, if a milkman comes to our city to sell milk, and if we find that the milkman allows his cows to drink out of a polluted stream, we prevent him from selling milk in the city; a very inconsistent position. But we are obliged to prevent this kind of milk from being sold, and at the same time we are

polluting the stream and producing a nuisance. But our board of health and city council are wide awake to this matter. They have only acted in this way because they did not know what else to do. I am glad our neighboring city has taken this up, and that such an able man as Mr. Hartzell is at the head of it. We have now before our city council and board of health the consideration of this matter, and I believe a committee has been appointed to investigate this, and I hope they will go to Canton and give the matter a thorough investigation. I hope that other cities of our state will take this matter up and prohibit the destruction of our streams, which in a few years, if it goes on as at present, will be simply open sewers, as in the city of New Orleans to-day. We cannot afford to do this. The pride of the state, saying nothing of its health, should be sufficient to prohibit the wholesale destruction of our streams.

The Chair—Is there anything further, gentlemen? If there is nothing further on this subject, I see my friend, Dr. Buechner, is here. Now, you were not here when we began our work for the evening, and we proceeded with the other paper, but we would be glad to hear your paper now.

Dr. Buechner—Mr. President and gentlemen, I wrote a short paper, because I believe in short papers and long discussions.

# ARE CEMETERIES LIKELY TO CREATE UNSANITARY CONDITIONS IN THEIR RESPECTIVE NEIGHBORHOODS?

## By Dr. W. L. BUECHNER, Youngstown, Ohio.

For years it was the prevailing opinion among sanitarians, physicians and the community generally, that cemeteries would pollute the soil, water and air in their neighborhood, and would therefore become detrimental to health. Bacteriological examinations were expected to show this condition beyond a doubt. The pathogenic bacteria, which cause the death of the individual, are, with the corpse, deposited in the ground in an active condition and capable of infecting. Remaining active for some time, it was supposed that through the movement of the ground-water they might be carried into wells in the neighborhood, or might gradually rise to the surface of the grave and infect the air. The infection of persons would, therefore, result from the use of infected drinking water, or from the inhalation of the infected air.

Careful and frequently-repeated experiments of Hoffman, Schottelius and Esmarch have shown that active bacteria, deposited in a grave, will, in a short time, lose their activity and become inert. These experiments were mostly made regarding the producers of cholera, typhoid fever and tuberculosis, but a number of unicrobes, pathogenic for animals were also included in these investigations.

Numerous experiments were made with human corpses, in which the pathogenic micro organisms were found before burial, and all these investigations are unfavorable to support the opinion that pathogenic microbes contained in a cadaver and with it deposited in the grave, are in any way dangerous to the health of the surrounding community. The bacilli of cholera were found inactive in two weeks; those of typhoid fever in a month, and those of tuberculosis in three months. The period of their activity depended somewhat on the material of the coffin and the condition of the soil, but all pathogenic germs had become inactive long before the

process of decomposition of the corpse was made. Some pathogenic bacilli die for want of oxygen; others have not the necessary amount of heat or sufficient nourishing material, and the bacteria of putrefaction will soon outgrow all pathogenic germs and the latter will perish.

The producers of small-pox, typhus, scarlet fever, measles and a number of other infectious diseases have not yet been found, but there is no reason to believe that the germs causing these diseases will act differently than those which have been found and experimented with, and although there are numerous proofs that persons have been infected by coming in contact with dead bodies of individuals who died from one of the above-named contagious diseases, there is no authenticated case recorded where anybody was infected after the body was buried. The certainty that pathogenic bacilli cannot remain active any great length of time either in the soil or ground-water, shows that their need not be any fear of the distribution of these germs to neighboring wells or springs. Repeated investigations have proven that ground-water is generally free from germs.

The filtering capacity of different kinds of soil is very different. Clay ground is unfit for filtration, and as there is almost no movement of the ground-water in such soil the germs cannot be carried away. Loose gravel could undoubtedly carry ground-water full of bacteria a short distance, but still the filtering power of such soil is so great that it would free the water from germs, so that they could not be found in wells or springs a few yards distant.

Should bodies be buried in soil saturated with water, no fear of pollution of ground-water need exist, as Esmarch has shown by careful experiment that in such cases the germs will die sooner than they will in dry soil. Old cemeteries, where for years no bodies were buried, are free from all danger, as the pathogenic germs have long ceased to be active.

Pettenkofer, Hoffman, Selmi and Brieger have shown that the products of putrefaction, including potomaines, taxines, peptones and poisonous albumenoids, are no source of danger of polluting wells, even in close proximity. These poisonous products become so diluted by ground-water or neutralized by the soil, or by the action of the saprophytic bacteria changed so quickly in smaller molecules, such as carbonic and nitric acid, ammonia, etc., that they are not dangerous. The gaseous products of putrefaction can not have a detrimental effect on health, and although the smell frequently encountered in morgues and vaults is a decided nuisance to sensitive nostrils, it can not cause disease.

The contamination of the air by pathogenic germs is out of question. Careful examinations of the soil around coffins to a distance of eighteen inches have not shown any disease germs, so that it is very improbable that they reach the surface of the grave, and even if they should they could do no harm. Bacteria can not rise from their own accord, and even the strongest draft of air can not separate them from underlying strata; the soil has to be completely dry and converted into dust, then the wind may carry the bacteria off with the dust; but as these microbes very soon become inactive in such a dry state they could not cause any harm.

After a careful perusal of the subject, I have come to the conclusion that properly located and well managed cemeteries are not likely to create any unsanitary conditions in their neighborhood.

The Chair—Gentlemen, the paper is before you for discussion.

Dr. Buechner—Of course, I want to say that I have not made any examinations of that kind myself, but I have tried to consult the best authorities I could find on the subject.

The Chair—It is early yet. If there is nothing further this completes the program for the evening.

A Member—We are laying out a cemetery, and I would like to ask the board what you think of tiling a cemetery; putting in tiles to drain it where it is wet, so that it will take off the surface water?

Dr. Buechner—Does the tile lie deeper than the graves?

Former Speaker—No sir. We propose to put in the main tiles about even with the bottom of the graves, and the others run into it.

Dr. Buechner—You can drink that water where it runs out and it won't hurt anybody.

Dr. Hedges--Dr. Buechner says that he believes that properly located cemetries cannot become dangerous to public health. I would like to ask what he means by "properly located cemeteries," and whether he believes that most of the cemeteries are properly located?

Dr. Buechner—Well, I would not allow a cemetery to be located on a side hill where there was a village right below the hill, and wells there, because I think there might be some danger there. I think there ought to be some attention paid to the location of the cemetery. In the report that I took most of this from it is stated that they had a barracks and a regiment of dragoons were quartered there, and there was a cemetery close by, from which they received their water. The whole regiment got their water from wells not over thirty yards from that cemetery laid on the side hill, and it was loose, gravely ground. They examined the wells frequently, and never found any pathogenic germs, nor micro-organisms, to an extent as to condemn the water.

A Member-I think we entertain a great deal more prejudice in this matter than we do real knowledge. I am going to cite a case that occurred when I was a boy. There was a horse died in the neighborhood that became very offensive, and was not discovered until it was putrid. The question arose how to dispose of that nuisance, and it was suggested that there was only one way to do, and that was to take a wagon load of loose dirt and cover it up. We did that, putting on a wagon load of dirt, and all the smell was gone; and we put on another one and it was a complete job. There was not more than three or four inches of dirt on top of that dead animal, and we shut out the putrid gas. I think it is a mistake to suppose that the gases of a decaying body extend any very great distance through the soil. Some of you may have had experience as health officers in having night-soil removed, where the night-soil was probably four or five feet deep, and had been built up for years. I have been on the health board of Elyria for years, and have had occasion to have such things removed, and my observation has been that after you get away a foot or two, or in a soft blue clay soil a few inches, you could not discover that there was any contamination of the soil. It had not soaked any great distance into the soil. Then there is another thing; soil is a very good filter, and water, after it runs a short distance through loose soil loses its contamination from contact with dead bodies. I think it is a prejudice rather than anything else, and if we were to investigate these matters we should find that cemeteries do not contaminate the soil but a very short distance from the body.

Dr. Stanton—I think the mere fact that a little dirt thrown over the corpse of a horse absorbed the offensive gases, does not show that had water percolated through that kind of earth, and the germs of disease had been there, that they might not be carried with the water. I would like to recall the instance that occurred in New York on Ward's Island, where, in 1866, a number of persons who died of cholera were buried, and a short time afterwards persons using the water from wells near here contracted the disease. There is an instance where I think the germs were carried some distance, and it is an illustration of a fact that is much stronger than any failure to discover microbes in water.

Dr. Miller-It seems to me that the idea of filtration does not dispose of the difficulties. If the decomposition of a dead body, or of night-soil in a privy vault is accomplished by being in the ground, and all deleterious matter that may be contained in it, whether dangerous bacteria or whatever it may be, are destroyed and returned to their original elements, then we might take this sanitary back track. But we are quite familiar with the pollution of the wells from privy vaults, in spite of this fact that we may dig into an old privy vault and find that it does not seem to have discolored the soil to any great distance. Unless the soil destroys it absolutely it is becoming more polluted. An inch or more becomes polluted, then two, three, four, five, six inches becomes so polluted; and as, with a good old-fashioned filter, we found that the filter would run the water through for a while, and it would improve the water very much; but we found after a while that the water was not improved; and we concluded, after a little, that there was something "rotten in Denmark," or some where else. The scientific men came in and showed us that this water was worse when it came out than when it went in. Now there is no doubt Dr. Buechner's idea is that the soil surrounding the dead body is well calculated to take care of these disease germs or other germs. That may be true enough, and yet we have got out of the way of thinking that a hole in the ground is the best place to put night-soil, if you can avoid it. And there seems a little disposition to go back to that; and, in fact, it would not take so very long until we would plug up Brother Hartzell's sewers and dig some more holes in the ground. However much truth there is in Dr. Buechner's paper, and it is a very good paper, and he has very good authority for the position he takes, yet he is too much of a sanitarian not to tell us to look out where you locate a cemetery. I have no doubt that Dr. Buechner can locate a cemetery in a place where it will not hurt any person; but the fact remains, and he allows it to remain, I think, that you had better keep your eye on cemeteries. The soldiers did not die; a good thing for the soldiers, but still Dr. Buechner would not have located the soldiers there, or if the soldiers were there he would not have located the cemetery

there. Now, the information is good and interesting, but yet let us beware of the sanitary consequences.

Dr. Ewing, of Findlay—If the information that that paper contains is correct, it seems to me that we would be perfectly justifiable, and that it would be a sanitary method of disposing of vault accumulations, to bury it; simply to fill up the vault with dirt, and it would be most safely and thoroughly disposed of. If that is true, then the health board of Massachusetts, that reports so unfavorable on this subject, and the health board of Michigan, in carrying disease germs from such accumulations in the water for hundreds of feet, cannot be correct. These men, these sanitarians, must have been mistaken. If the water that comes from these cemeteries does not contain any germs, may it not take on enough organic matter under such circumstances to be a good breeding place for disease germs, and thus unsanitary?

Dr. Buechner—In what respect?

Dr. Ewing—From the fact that it would have the organic matter in it, and be a good breeding place for the disease germs even if they are not in it, wherever the accumulations would occur.

Dr. Buechner—If that soil is clay, where there is no movement, or hardly any movement, of the ground water, neither pathogenic germs nor any other micro-organisms can be moved by that ground water. If the soil consists of good gravel it will remove the micro-organisms just as well. In the case of that barracks, they did not find either pathogenic or micro-organisms sufficient to condemn the water. Now, the opinion that a person has I don't give much for. I take the experiments of scientific men. I know I thought cemeteries were terrible things. We have a cemetery right in our place now, since Youngstown has been extended. Since I have studied that I don't think it does any harm at all there.

Dr. Ewing—The question that I want to raise is this: If that is good philosophy, why not bury the contents of privy vaults?

Dr. Spencer—I think that some of the gentlemen who are discussing this question are rather begging the question. The doctor's paper was with reference to cemeteries, and the burial of the dead, and we certainly cannot class the accumulations for years of a privy vault with the burial of one dead body in the clean ground of a cemetery. The probability is that if you would keep adding a dead body to the location of the first one every fifteen or twenty days for fifteen or twenty years, that the contamination would eventually reach some distance through the soil, and perhaps might contaminate the water supply somewhere. We are more likely to receive contamination from vaults in our wells from the fact that wells are located near to these vaults. In all our growing towns we all see illustrations of this. I call to mind one or two cases where towns have grown out beyond cemeteries, and have surrounded them, and the facts remain that these cemeteries have produced no visi-

ble effect upon the health of the community. The same thing exists in Cleveland. The old Erie street cemetery is surrounded by the city proper, and I don't think that the health officers of the city of Cleveland will find that the old Erie street cemetery has produced any effect upon the health of the city, not half as much as wells which have been located in proximity to privy vaults. The doctor's paper, I think, is well taken, and as one has said, he has protected himself in his paper by saying that he would not locate a cemetery above a village. It is safer to locate it below the village. But in discussing the doctor's paper we should not compare the deposit of night soil in privy vaults to the subject matter of his paper. We ought to give him a fair show on the paper.

Dr. Probst—I do not think the idea should go out from this meeting that cemeteries are free from all danger, and I don't think that Dr. Buechner desired to make that point. It will depend a good deal, of course, upon the evidence that can be brought as to the life of germs in the soil. Now, I understood Dr. Buechner to say that they were very short lived. That is probably true in the majority of cases. But there are some very authentic records made of small-pox having followed the exhumation of bodies of persons having died years before of that disease. There are also records to show that the germs of anthax from which cattle have died may remain under ground alive for considerable periods. Now, if that is true, the question would be as to whether they might be carried under ground. The doctor takes the position that they are all filtered out of the soil. The experiments recently made at the Lawrence Station, Mass., carries out the doctor's idea to a large extent, but not entirely. With the best filters they can prepare, six or seven feet in depth, they have been able to filter out about ninety-eight per cent. of all the germs, but there are two per cent. remaining that go through. That two per cent. might be of the pathogenic variety. Of course nothing can be said regarding that. I don't think the doctor will dispute the fact that we have occasional outbreaks of typhoid fever, due to the pollution of a well from a privy vault at a considerable distance, the germs having been carried underground from the privy vault to the well. The Luzerne, Switzerland, epidemic is frequently referred to where the germs of typhoid fever were carried under an entire mountain and gave rise to the outbreak. If these are facts, and I put them up against the doctor's facts without commenting on them, there is some danger in a badly located cemetery.

Dr. Reed—I think it is proper that this association should consider this question very seriously before we adopt the ideas advanced by my friend, Dr. Buechner, that a cemetery is particularly dangerous. In looking over the title of his paper, "Are cemeteries likely to create unsanitary conditions in their respective neighborhoods," it occurred to me that that was a broad question. The length of life of disease germs depends largely upon the kind of germs. It the germ can live without air it may

subsist for a long time; and if the germ happens to be a germ that must have air, and is buried in the ground its existence will be very short. But laying aside the question of germs altogether, does not water from a cemetery become contaminated with organic matter? If we are allowed to compare a privy vault, which I think is a fair comparison, we find that it is fetid matter in both cases. We know very well that in the case of wells that was spoken of by Dr. Probst the germs were carried under a mountain and percolated into the well, and the typhoid fever outbreak was the result. A few years ago when the Pasteur filter came out it was announced as proof against typhoid fever, and that it would filter out the germs. I wrote to Dr. Sternberg, whom every physician knows to be authority on the subject, and asked whether he considered the Pasteur filter proof against the germs of typhoid fever. He said, "No." Now, if a filter that is made as the Pasteur filter is not proof against the germs of typhoid fever, how can we expect an ordinary soil to be proof against the germs? I know in our own town we have had instances of typhoid fever outbreaks caused by parties drinking well water that we know had been carried, at the least calculation, fifty feet.

A Member—What was the character of the soil there?

Dr. Reed—Well, it is a clay soil.

Dr. Calvin—Just two or three examples: In the town of Columbiana, in Mahouing county, there were three or four wells upon a vein of water or stream flowing underground. This fact was shown by agitation in the wells up the stream causing the others to become muddy. There was a case of typhoid fever in the dwelling furthest up the stream, and following that typhoid fever appeared in all the other houses on that stream. In Washingtonville there is a stream of water flowing under acemetery that has been there for fifty years, I suppose, and so far as we know there has been no trouble from that stream. North of there, in the country, on my father's farm, there was a spring about seventy-five vards from the barnyard which, at every hard rain, would become highly colored from the barnyard. The spring at the house was not disturbed, perhaps one hundred and fifty yards away. An uncle of mine built about fitty rods east of that, and that so much contaminated the water at the house that they could not use it. This water all came underground. These are positive facts, and you see that bodies buried along any of these watercourses would certainly be very dangerous. It may be harmless in one location, but in another location it may be exceedingly dangerous. No one case proves all, and while I like Dr. Buechner's paper I cannot approve of everything in it. Here is this ease of a spring for years and years coming from under a cemetery and no harm from it; and yet here is a spring that is contaminated fifty rods away from the barnyard, and that comparatively soon after it was built there.

Dr. Leick—During the past fifteen years very few burials have taken place at the Erie street cemetery. It is not a public cemetery owned by

lot owners. As to contaminating wells from the Erie street cemetery, that is impossible. I don't think there is a well within the radius of a mile around there. They have all been condemned. So I don't think that can be taken as a proof.

Dr. Hoover—Why were they condemned?

Dr. Leick—Because they were unsanitary.

Dr. Buechner—Now, gentlemen, with all your arguments I claim you have made no argument against my paper. Now, you talk about typhoid fever germs, getting into wells. How did they get in? Does any one of you pretend that those typhoid fever germs sink into the ground some distance from that well and go through that ground into the well? If you say that is true you say a thing that every bacteriologist tells you is not true. I have looked this matter up. They tell you that the germs get into the wells through the surface water. And every one of you that ever studied bacteriology the least bit will know that pathogenic bacilli cannot live any length of time in the ground. It has not oxygen enough. It has not enough nourishing material. It will die very soon. And I claim yet that no pathogenic germs that lie in the ground can do any harm. It will either die there from one of the causes I mention or will be removed by filtering through the ground, and if the ground is not fit for filtering, if it is clay ground, of course, the water cannot move in it.

Dr. Swanton—I would like to ask how the germs got through that mountain in Switzerland?

Dr. Buechner—Well, I don't think any person would believe that typhoid bacilli would penetrate a mountain.

Dr. Stanton—Well, I would like to ask him another question. He says those pathogenic germs cannot live long under ground. I would like to ask how he accounts for an outbreak of smallpox by the disinterment of a body some eight years after burial.

Dr. Buechner—We have not found the bacilli of smallpox yet.

Dr. Stanton—I think that is an equivocation. He is trying to avoid the question. There is something there which causes the disease, and if it lives in the ground eight years it would do damage if washed into a well.

A Member—In our place we have a well sunk in the middle of a cemetery for the purpose of watering new sod put on the graves, and for watering flowers. It is not used for drinking purposes at all; but that well is right in the middle of the cemetery. Would you consider there is any danger from an arrangement of that kind; whether it might be used for drinking purposes.

Dr. Alderman, of Athens—I would like to ask if the danger is not lessened from the fact that nearly all the bodies are embalmed and pretty thoroughly disinfected before they are buried? Is not that the reason that there is very little infection from cemeteries?

The Chair— It might have a modifying effect. It is a question we can hardly answer. Is there anything further upon this subject?

Dr. Aldrich, of Defiance-Mr. President and Gentlemen: I want to make a statement to you gentlemen concerning smallpox. A week ago yesterday there were five young men went from our place to Chicago to work in a factory. They went to a boarding house for four days. When they came home on the fourth day for dinner they found the boarding house with a card nailed on the door, stating that there was smallpox in the house and that it was under sanitary rules and regulations, and sixteen of the boarders were locked up in the house. And they got away and those five young men came back to me. I am the health officer of Defiance. I ascertained the facts in the case that they had been exposed to smallpox for four days and nights, with a case right in the house, and not a very large house at that. I went to work to corral the gentlemen, and got them in a building and furnished them with bedding and put a guard over them to hold them there for twenty-one days. I got everything all right and sent my sanitary police over to lock them up; and about that time there was an attorney, a very prominent attorney of our place, came to me and said, "Doctor, I guess you would better let up a little or you may get into serious trouble-These boys have not been cown with smallpox vet. They havn't got sick, and I don't think there is any law to reach them; and being a friend of yours I thought I would advise you to let up." He took me up into his office and read the law to me just as he told me. I had no authority there, and these boys are still running at large in our town, to all our places of public amusement, and everywhere they see fit to go. Now I just want to ask you, gentlemen, what you would do under such circumstances as that? There is a city of ten thousand inhabitants, all looking to me to look after their welfare, and I am trying to do the best I can under such circumstances as that, and it appears no law in the state of Ohio will back me up. Now I want information from you gentlemen what you would do if it were in your town.

The Chair—Gentlemen, has anyone anything to offer on this subject?

Dr. Probst—I don't think the health officers here ought to be left in the lurch that way. I think there is a law that can reach such cases. There is no specific law, but it is provided that boards of health may enforce such regulations as they deem necessary to prevent the spread of infectious diseases; and your board has authority to quarantine these tren for the full incubation period of smallpox.

The Chair—Did you vaccinate them?

Dr. Aldrich—They have all been vaccinated.
The Chair—You did not re-vaccinate them?

Dr. Aldrich—No. sir.

Dr. Reed—I claim that the laws of the state of Ohio give the board of health all the power necessary to quarantine these four boys, and hold them until they were satisfied they were safe to the community.

The Chair—Most assuredly.

Dr. Reed—Had those four boys come to Mansfield I would have held them in spite of any law any lawyer can produce. I would have convened the board of health and they might go on with their law suit, and I would have stood it. Take it in our own city last year, when a case was imported from Akron to our place, and we quarantined everybody that was associated in any way with it. We quarantined four school children and kept them there twenty-one days, and nobody disputed our right to do so.

A Member—My friend, Reed, in Mansfield, even went so far as to quarantine Akron, Ohio, one hundred miles from Mansfield.

The Chair—Gentlemen, it is to be sincerely regretted that boards of health and cities and towns, where there is no health organization oftentimes wait until their house is on fire before they undertake to inform themselves of their rights and privileges. A great many of the towns wait until they have a scourge of smallpox or diphtheria, or scarlet fever before they organize a board of health. The State Board of Health is always ready and glad to furnish information. The question was answered by the secretary of the State Board of Health. A local board of health has authority to issue an order that would have covered the case in point and your lawyer was ignorant.

A Member—No, the board of health was ignorant.

The Chair—Well, perhaps, both; the lawyer's advice was bad.

A Member—I represent Morristown, and our board of health told the health officer to use his own judgment, and they would sustain him. Now, I want to know how far I can go.

The Chair—You can't go at all. That is another mistake. They cannot delegate to the health officer any such power. The law says the board of health may issue or shall make such rules and regulations as are necessary. The health officer is the executive officer of the board. The difficulty is that the local boards of health do not have the proper interest in it until they are awakened by some calamity; then they are auxious to do all they can. But before, they allow the health officer to assume all the responsibility, and he has no right to do anything at all without the authority of the board behind him.

A Member—It seems to me that the health officer of the board of health occupies the same relative position to the health board that the sheriff occupies to the court. Now, the court takes recognizance of those matters that come before it, and gives orders to the sheriff, and he is just as much in duty bound to carry out those orders as any other officer is bound to do his duty under the law. I have the honor to be a practi-

tioner of law, in my weak way, and I would be the last man on earth to give a health officer such advice as the doctor says he received from a lawyer, because it is the duty of the lawyers in this country to protect the health of the people as much as to protect their rights in any other direction; and boards of health have reason, also, to rely on the statements made to them by members of the bar, and a man should be very eareful in giving advice to boards of health or to health officers. Now, these questions come to me quite frequently, not only from our own board of health, but from the boards of health in neighboring townships and villages, and I am always very careful, before giving advice, to satisty myself that I have good reason for the advice I give and that I would be sustained by the courts. No, I don't think there is any question or any doubt but what in the case in point the gentleman, as a health officer, by the direction of his board of health, has a perfect right to quarantine those boys and keep there them, and had I been acting in that capacity I should have shut them up, law or no law, rather than injure the health of my family and the families of my neighbors.

Dr. Collins—I believe the true explanation of the trouble with local boards of health is to be found in this fact, that in the majority of cases in small towns the boards of health are afraid of the people. The people are standing to-day about where the medical profession was a quarter of a century ago. The people are not educated up to our ideas of sanitation, and the newspapers in the southeastern part of Ohio have seen fit to attack in a very strong manner the Secretary of the State Board of Health for his work in the cholera matter of last year, and said that he tried to get up a smallpox scare and had failed. I had the pleasure of answering one article that appeared in a paper at Ironton, Ohio. The trouble is this, with the local boards of health, that a mass of ignorant people stand behind them ready to crush them when they attempt to protect them against these diseases, and unless the health officer is a man independently independent, or independently rich he is at the mercy of this rabble. One of the things I have heard to-day complained of more frequently on the street than anything else is that these gentlemen that have come here are not physicians but come here as members of different boards of health to ask for information on just such subjects. In order to make health boards efficient you must educate the common people, and let every physician, wherever he stands, as far as he is able, make it his business to educate his people up to the rules and regulations of the health board. If that is done you will have plain sailing, and the people will sustain you. If you find a town where they have been scourged with smallpox or any other scourge you will find the people are ready to accept the services of the health board.

At this point, on motion the convention adjourned to Friday morning, January 26, at 9 o'clock A. M.

## THIRD SESSION.

FRIDAY, 9 A. M., January 26, 1894.

The convention was called to order by Dr. Hoover, who said: Gentlemen: We have before our convention this morning two subjects for discussion, typhoid fever and smallpox. Both of them are of considerable interest and will probably elicit pretty general discussion. It seems to me that it would be a pretty good idea for us to agree upon some systematic course of discussion before we enter upon it, limiting speeches to a certain time and not permit a member to speak more than once until each has had his turn.

Dr. Kahle—Mr. President, I move that the discussion be limited to five minutes, and that no member be allowed to speak but once until each has had his turn.

The motion being seconded, prevailed.

The Chair—The first paper on the program is a paper on the cause of typhoid fever, by Dr. J. H. Calvin, Health Officer of Huron.

Dr. Calvin—Mr. President and gentlemen: I might introduce my paper by saying that as to the cause of this fever you will no doubt consider somewhat radical. I have purposely made some statements that will bring out a pretty general discussion of this matter.

#### CAUSE OF TYPHOID FEVER.

## By Dr. J. H. Cai.vin, Health Officer, Huron, Ohio.

For everything there is a cause, although often we are not able to find out that cause. There is a cause for typhoid fever. Some think there are several causes, but the general belief on the part of those who know most about this disease now is that the only real and true cause of this fever is a little microscopic plant or insect called Eberth's bacillus. Many persons laugh at and ridicule the idea of these germs having anything to do in the way of causing typhoid fever, or any other disease, for that matter. But so many good and intelligent men have studied these germs very carefully, and they are almost all agreed in declaring that these germs are not found in any other sick persons except those having typhoid fever, and these men are just as sure that nothing but these same germs will cause this fever-Just how these miserable little things produce this disease is not so easy to say. There are those who believe that there are several different causes for some kinds of disease, and I am not sure but that I used to believe that way myself. I must confess, however, that at present I cannot very well help believing that diseases, like animals and plants, each have just one certain cause, and not several, as some of them may seem to have. I am not going to stop to argue this, perhaps rather strange belief to some, probably to most of you. To briefly illustrate what I mean, I think you will all agree with me when I say there is just one cause for smallpox, and that cause is smallpox. I am pretty sure you all believe that smallpox always comes from small-pox. You do not expect, and you do not believe that anything but measles will produce measles. Just so I believe that there is but one cause for every disease, and, therefore, but one cause for typhoid fever; that is, there is just one sort of poison, one kind of germ that will cause this disease. It does not seem to me that there is anything strange or unreasonable in believing this way. No sane man expects to plant corn and raise potatoes, nor does he think of looking for pears on a peach tree.

When we see a plant spring up we do not believe that it just came up by chance from no seed at all, nor do we believe that it came up from any other but its own kind of seed. We know, too, that each plant bears only its own sort of fruit and its own kind of seed, whose seed is in itself. The tall hickory of the forest never, by seed or change, becomes the strong, lone oak of the field. The same universal law prevails in the animal kingdom, and why not in the disease kingdom? Like begets like-Each disease, according to this universal law, and in obedience to it, yields fruit and seed each after its own kind, whose seed is in itself. Why should not like beget like in the disease kingdom just as it does in the animal and vegetable kingdoms? There is too much of order and too little of chance; too much of fact and too little of disorder in the disease world for us to consistently believe things just happen so. The seed that grows typhoid fever is Eberth's bacillus, and the product of these germs is typhoid fever again. I am not going to say that this fever produces these germs. These germs do not always cause this fever when taken into the body. Just why this is so we do not know. Those who once had this disease seldom have it again, no matter how much of the poison or bacillus they may take into their systems. We cannot tell why this is so any more than we can tell why most persons who have had measles, scarlet fever, smallpoxetc., will not again take these diseases, nor can we tell why thorough vaccination will protect against smalipox. We only know these things are so. From this we see that the cause will not always produce the disease. So long as the cause does not get into our bodies so long will we be safe from the discase.

As causes favorable to animals and plants lead them to grow and multiply, so, too, the causes favorable to diseases lead them to grow and multiply. Neither the seed alone nor the soil alone will cause or produce anything. This is as true of typhoid fever as of anything else. So long as the germs, which are but the seed, do not get into the soil so ted to their growth and multiplication, so long will they do no harm; and I suppose that after a good while, perhaps several years, the germs or seed would become too old to grow anywhere. Believing, then, as I think we ought and must, that typhoid fever is never caused by anything but these germs seen in this fever, and that these germs always are the children of other germs of the same sort, and are never produced spontaneously, or by chance, as we say, we only believe the same as we do in other things. No matter how favorable the soil and conditions are, no plant ever grows there until the seed of that particular kind is first there planted.

When a farmer sees growing out from the edge of some old pile of manure some troublesome weed, green and strong, he knows that this weed has not come up by chance, and he would rightly laugh at me or any one else who should say to him that it had come up by chance. He would know better. If you see a homely but honest o d-fashioned pumpkin vine, or a strong plant of corn growing up alongside the pig-pen or privy, you may know that the seed from which these came up was not purposely planted there; and you know, too, that each of them is there because, in some way or other, the seed got there and grew. Just so, when we see a case of typhoid fever, we ought to believe that it has come from the germs or seeds of this disease getting into the system. It is not always easy to tell just when or where they got in, but you can be assured that if they had not gotten in there would have been no fever of this sort.

While thus emphasizing my belief that there is one and only one actual cause of typhoid fever, the germs above mentioned, I would not have you believe there are not other important causes, which we will call auxiliary or helping causes; but I am very sure that if we will take a plain, common-sense view of the actual cause

it will help us to better understand it, and that we will know better how to keep the cause of this fever away from us, as well as to keep away from the cause. You will pardon me for making so much of farm incidents and experience, but we need to study the cause of typhoid fever just as the farmer studies and looks out for troublesome plants. He knows the cause of all such pests is because, in some one of a thousand ways, the seeds have gotten where he finds the plants themselves. He inspects his clover and timothy seed, his wheat and oats before sowing them. He is always on the lookout for the seed of the plants he does not want on his land. He is watching to keep out the cause. Suppose, however, that when he plants corn it would produce thistles; of what avail would be all his care and watching?

Most of us are rightly afraid of filth, especially so when we are expecting or know typhoid fever to be about. This is as it ought to be, and yet no quantity or sort of filth will cause this fever so long as the germs, or seed, or poison—call it whatever you wish—do not get into the filth. Bad water is dangerous in several ways, but it will not produce typhoid fever any more than it will smillpox, so long as the cause of the fever does not find its way into the water. On the other hand, the best of water may, in some way, get these germs into it and in this way give rise to this fever. However, water having in it decaying animal and vegetable (organic matter, as we say), is just the kind of water in which these germs live and grow so we l.

Stinking vaults, dirty pig-pens and overflowing stable-yards are very dangerous, especially when near wells, the water of which is used for drinking purposes, since heavy rains and snows are apt to overflow such places, and this overflow water very often finds its way into wells near by, carrying along with it filthy, poisonous matter from all these places. This loads the well water with what we call organic impurities, which, in some way, seem suited to the growth and development of typhoid fever germs, should they get into such water.

Suppose some one who has this disease comes to your house from the city, as is so often the case; he has a dia rhœa, and the stools are carried out and thrown into a privy or on top of the ground, from where the germs can easily find their way into the water used by the family. You all can readily see how great would be the danger of typhoid to every one drinking the water from such wells.

In looking about for the cause of this disease, we ought to exercise the same common sense, and exercise it in the same way, we would in seeking for the cause of other things, and from which we wish to free ourselves. We have learned a good deal about some things, as to their size, shape, habits, and so on. We do not dig in the earth to find birds, nor do we expect to find reptiles in the air. We know that some insects naturally live in the air, while others as naturally live in the ground or in water. In searching for the cause of any mischief, we naturally want to know what did it, where it came from, how it did the mischief, and how the mischief may have been prevented. Now, the best thing to do is, if possible, to find out the cause, and remove that when it can be done. It will always help us a great deal if we know what the cause is, so that when we find it we will know it. The cause of typhoid fever is not something we can easily see, but men have learned something of where it is apt to be found, how it gets there, how it gets into the body, what it produces after it gets there, and how we can prevent much of the harm it does.

These germs of Eberth are seemingly best suited for living in certain kinds of ground; in filthy, damp places, and in bad water, especially water containing organic matter. In this you see how such things are so dangerous in this fever. I hope you will listen carefully as to how they get there, and how to keep them out of these and other dangerous places.

The Chair—Gentlemen, the paper is before you for discussion.

Dr. Buechner-Well, I guess I will have to say something. I am very much pleased with the doctor's paper, because it expresses exactly my opinion. I think the old fogy idea that filth and dirt cause typhoid fever is dying out; although we hear it every once and a while. I know it was my experience as health officer that every once and a while people would come saving they wanted their yard cleaned up, that the doctor said they had typhoid fever in their house because their vard was dirty. I don't think typhoid fever can ever originate de novo, that is of itself. I think you must have the specific bacillus there. I don't think there is any question about it. I firmly believe that ninety cases out of a hundred are caused by contamination of water. I think I have traced it to contamination of milk, and it undoubtedly is brought into the body by eating uncooked food. Of course, if there are some bacilli on food that is uncooked it may be caused in that way. Now, I don't believe at all in air infection in typhoid fever, as in the case of measles, scarlet fever and smallpox. I don't think that it is likely to enter our system in that way, and I see by our best authorities that that idea is pretty well abandoned. The only prominent man that I could find who speaks about air infection is Rober. He claims that it might be contained some place in the ground, and the ground be converted into dust, and might be carried with that dust in the air, and in that way be introduced into the system by swallowing. I cannot agree to that because it is a well established fact that there are very few microbes that can remain active any length of time in a dry state. The only bacillus that has been found that will for any considerable time retain its activity in a dry state is the bacillus tuberculosis. That has been found alive a year after the patient died. But that is the only one, and I don't believe at all that the poison of typhoid fever ever enters the human body through the respiratory organs. I think the bacillus must be deposited in some way in the alimentary channel. Of course, the pathogenic microbe, to cause a disease, must find the system in a peculiar condition favorable to it. What that exact condition of the system is, of course, we don't know.

Dr. Calvin—Mr. President, wouldn't it be a good idea to have these papers all read? You see there is such a tendency to lap over onto some person else.

Dr. Stanton—It seems to me it would be well to have these papers all read. In the discussion yesterday on scarlet fever and diphtheria we had the same difficulty. I move we have the papers read on these subjects, and the discussions following the reading.

The motion being seconded, prevailed.

The Chair—The next paper is by Dr. Downs, Health Officer of Waterville.

Dr. Probst—I received a letter from Dr. Downs, saying that he had made his arrangements to come but was detained at the last moment, and could not be here.

The Chair—We will pass on to the next paper then, which is by Dr. S. B. Post, Health Officer of Canton, on the prevention of typhoid fever by boards of health. It seems he is not here. The next paper, on "Typho-Malaria Fever," by Dr. J. T. Woods, Health Officer of Toledo. Is Dr. Wood here?

Dr. Stanton—I may say in explanation of Dr. Wood's absence, though I am not authorized to do so, that he arrived last evening and was taken sick on his way from Toledo, and is therefore unable to be here this morning.

The Chair—We will now hear the paper by Dr. Brundage, on "Disinfection in Typhoid Fever."

### DISINFECTION IN TYPHOID FEVER.

By Dr. L. H. BRUNDAGE, Health Officer, Xenia, Olijo.

While discussing this subject, I think it would be appropriate to try and explain, in a few words, what is meant when we use the above term, as there seems to be a general misunderstanding regarding the special or true significance of the same. By disinfection proper, we mean the destruction of the infecting power of infectious material, and it is our object to destroy, in the most complete manner possible, the infecting power of infectious diseases; for so long as the specific germ retains its vitality in any portion of the material, this must be considered infected. We should not fall into the error of calling a deodorant a disinfectant, or deodorizing/disinfecting, for we have a large number of deodorants which possess little or no disinfecting power. Even medical works sometimes confuse the two terms. I remember an article on disinfection by a distinguished specialist, who spoke of the very satisfactory use of Platt's chloride as a disinfectant. Now the above article, like a large number of commercial products, has been proved by exact experiment to possess little, if any, disinfecting power, although it is an excellent deodorant.

We, as sanitarians, should not fall into the popular error of using the term disinfectant as synonymous with deodorant.

To return to the subject proper, we have a disease, which has been so clearly shown by the gentleman preceding me, whose usual modes of disinfection are soiled linen, faces, hands of attendants or nurses, and ninety-nine times out of one hundred through the drinking water. With these conditions confronting us, what is the most practical and efficient manner of disinfecting the infected material in order to make it perfectly harmless? A result which, I have no hesitancy in saying, is seldom, if ever, accomplished.

The crudest idea seems to prevail as regards the vitality of the typhoid germ. One text book recommends a five per cent, solution of carbolic acid. As an efficient disinfectant for typhoid fæces, this may even seem ridiculous when we realize that after twenty-four hours the germicidal action of this fluid upon the discharges is not complete, a large number of germs still flourishing—typhoid bacillus having peculiar resisting power to carbolic acid. By far the best laboratory germicide is corrosive sublimate, but in the sick room this is open to certain grave objections. First, on account of its extreme poisonous nature. Second, being destructive to all plumbing and water pipes; it is also precipitated by albumen, so in case of stools containing blood or slough the exterior of these albuminous particles will be coagulated, while the bacilli is carefully preserved within.

Chlorinated lime owes its germicidal action to the amount of hypochlorate of lime which it contains—the commercial article usually having about twenty per

cent. By exposure of two hours, a solution of one to one thousand, containing three per cent. of available chlorine, the typhoid bacilli was killed; and in five minutes in a solution containing twelve per cent. This has been recommended by the American Health Commission, with the following directions for making, viz.: Dissolve chloride of lime in pure water, proportion of six onness to the gallon. Use one quart of this mixture for disinfecting each s.ool. Mix well and leave in vessel at least one hour before throwing into the vault or water-closet. Same directions applied to vomited matter.

Creolin, according to Esmarch, does not kill typhoid bacilli in one-half per cent, solution in less than seven days; the presence of albumen also interferes with the disinfecting powers. Hydrochloric acid has been strongly recommended as a disinfectant for typhoid stools. But this is open to the same objections as corrosive sublimate—it is poisonous, destructive to plumbing, and, in addition, throws off irritating fumes. The disinfecting power of calcium oxide has recently been the subject of careful study and research by an eminent German specialist, who has determined with great precision the weight and volume in which it must be mingled in order to disinfect typhoid discharges. He has ascertained that a stool is thoroughly disinfected when enough milk of lime has been added to produce a strong alkaline reaction. The great advantage of lime is that it is cheap, speedy in action, absent of odor, and entirely safe in use. In our present state of knowledge this is the disinfectant which should always be used.

With the above theoretical consideration of the subject, I will now endeavor to formulate a practical and efficient plan of action in disinfection of this disease. Upon being called to such a case our first efforts should be directed to all cess-pools, drains and vaults. These should be thoroughly disinfected by milk of lime. Using one part of calcium oxide and four of water, a sufficient quantity is added to constitute at least two per cent. of contents of vault; then use one or two quarts daily, or about one per cent, of daily addition to the vault, always being careful to make a fresh solution each time. Freces, vomited matter, saliva and urine are mixed with the same quantity of the milk of lime, stirred well and not thrown into vault or closet until after being thoroughly mixed thirty minutes. Dishes, spoons, knives, forks, etc., are best sterilized by boiling. Towels, handkerchiefs, shirts, pillows, sheets, and other clothes should be frequently changed, the soiled articles being placed in a wash boiler containing a solution of five per cent, carbolic acid, and as soon as possible thoroughly boiled. Attendants and nurses should never leave sick room without thoroughly washing hands and face with a five per cent, solution of green soap and carbolic acid. No one in the house should be allowed to drink any but boiled and filtered water, always being very careful to see that the filter is clean.

After recovery or death of patient, all articles of clothing and bedding, whenever practical, should be thoroughly boiled; those injured by this process can be sprinkled with five per cent, carbolic acid solution, and hung in the open air and sunlight for several days. The carpet should be removed and thoroughly cleaned; whenever possible, sent to a steam-cleaning establishment. All wood work and articles of furniture can be cleaned without injury with five per cent, solution of carbolic acid-the floor scrubbed with a carbolic acid green soap solution.

The above directions may seem to some unnecessary in typhoid fever, but when we find such a large percentage of deaths from same, and realize that with proper sanitary and preventive measures this insiduous and creeping monster may be bridled, or is it too much to say, eradicated entirely from our civilization. No system of disinfection, however burdensome, can be called unnecessary.

The Chair—Then, gentlemen, this will throw the five topics before the convention for discussion. Dr. Harper—As I understand, we are to take up the discussion of typhoid fever; cause of, how communicated, prevention of by boards of health, disinfection, and typho-malarial fever.

The Chair—One minute to each subject.

Dr. Harper—Typhoid fever, as the gentleman states, is generally admitted now to be due to germs, being an infectious disease caused by these germs. As he states, there are minor causes entering into it, as to the condition of health, to produce typhoid fever. There is one predisposing cause that I would like to make mention of because it is cited in text books by eminent writers, and that is, they claim that people are more liable or susceptible to typhoid fever from the age of fitteen to twenty-five years, and it is a rare occurrence in people after fifty years of age. I would like to remark, and I don't want to intrude upon the gentleman's opinion, that we have very good authority to show that it will occur in the same individual at different times, and also that it will occur in the same neighborhood at about the same time for a number of years succeeding; that is, you will have it one year and the next year it will occur about the same period. Another thing I would like to speak about is disinfection of the discharges. One method of disinfecting fecal discharges is to take a porcelain kettle and cover the bottom well with sulphate of iron; then have the excretions put in this kettle, then take crude sulphuric acid, a third as much of the acid as the contents of the vessel and put that in; then take it to a pit and bury it. It should not be buried too frequently in one place. There should be different trenches made, and while digging trenches they should take sufficient precautions to not make the trenches where they will likely infect wells or contaminate water that is used for household purposes. Another point is that while we admit that the disease is due to this germ, just how it enters the body we are not able to tell always. This germ, it is claimed, is not dangerous in a fresh state, therefore it is very necessary that we should destroy this germ as we go along. Another thing: In inspecting or looking after the cause of typhoid fever we should take into consideration the sewer to see that it is complete and no vent left for the escape of sewer gas.

A Member—I would like to suggest that some one be designated to speak on "How Communicated," and on "The Prevention of by Boards of Health," and I think the time ought to be extended. This is a subject of the utmost importance to us as members of boards of health, and I know that typhoid fever is our greatest danger in our city. And it seems to me that inasmuch as these gentlemen have not their papers here it would be a good idea to have the chair designate some one to speak on these subjects. I wish, too, that next year the papers could be sent here if their authors are not here. I move that ten minutes be given on this subject to some one who will address us.

A Member—I suggest Dr. Probst.

The motion being seconded, prevailed.

The Chair—The motion was that ren minutes be given to Dr. Probst on "How Communicated and How Prevented." Dr. Probst you are appointed to discuss these two subjects, and you are allowed a very short time to do it in.

Dr. Probst—I am very grateful for that. I thought I had sufficient trouble in attempting to arrange this program. I had no expectation of being called upon to substitute for another person, and my remarks will certainly be very limited. Dr. Buechner says that typhoid fever in ninety per cent, of the cases is due to the water supply. If that statement is correct, and I would be willing to accept it, we can generally look for typhoid fever being carried through the water supply. Now, in any city having a public water supply it is of the first importance, of course, to a board of health to guard that public water supply. There are many towns in this state that have a public water supply which is polluted with the sewage of the towns higher up the river. In that case we might expect typhoid fever to be communicated through the public water supply, provided they were having an epidemic of typhoid fever in that town above; and the cities of Lawrence and Lowell, Massachusetts, have recently gone through very serious epidemics of typhoid fever which were directly traceable to that source. Often, of course, the board of health is powerless to control this matter, except to bring their influence to bear in the direction of the paper we had by Mr. Hartzell last night; that is, that all cities shall be compelled to purify their sewage before they turn it into the river. But the majority of the people of Ohio are drinking water from wells. Dr. Buechner, I believe, is going to have something to say on the subject of typhoid fever communicated through our wells. The Doctor is very skeptical about the passage of typhoid fever germs through the earth into the wells, and thereby communicating typhoid fever. The point was made last night that such instances of typhoid fever from a well are usually due to the polluting material being carried over the surface and in that way getting into the well, and that it does not pass through the soil. That will depend greatly on the character of the soil in which any well is located, For instance, they lately had an epidemic of typhoid lever in the little village of Rising Sun, that seemed to be directly traceable to the use of well water. There the town is built upon a rock which crops up to the very surface. It is a shale through which the water would pass latterly for great distances. They had no typhoid fever at all in that town for many years until a man was taken sick with typhoid fever which was probably contracted away from home. The fecal matter was thrown into a privy-vault which was dug four or five feet in the rock. Following that, a few months later in the fall, cases of typhoid fever appeared here and there, first in the neighborhood of the vault where these discharges were thrown. Since that time they have had typhoid fever. That was four

or five years ago. Every fall up to the present time they have had typhoid fever, and during the present fall they had quite an epidemic for a village of five hundred inhabitants. So that, in looking about for how typhoid fever may be communicated through water supplies, we must take into consideration the character of the soil. Typhoid fever may be communicated through milk, and a number of epidemics have been traced to that source. It may be that the milk was polluted by the handling of persons living where typhoid fever was in the house. Or, it may have been polluted by washing out the cans or utensils with water which had been polluted with the typhoid fever germs, or possibly in some other way. So that in looking for the cause of a typhoid fever epidemic we must always take into account the milk supply. Dr. Beuchner—Doctor, excuse me for referring to you so often; I refer to you as an authority-Dr. Beuchner tells us that typhoid fever probably never comes through the air. I question that very much. I do not wish to state that it is usually an air-born disease, but I do know that a number of epidemics of typhoid fever have occurred which seemed directly traceable to bad drainage. I mean to say that if a house is connected with a public sewer, with no traps upon its fixtures, as you will find in some houses, or with very bad traps so that there is free escape of gas from the sewer in the house, that under such circumstances there have been outbreaks of typhoid fever, which seemed directly traceable to such faults of drainage. In this case we can only suppose that the air currents have borne along with them the germs of typhoid fever. In every city of any size typhoid fever cases are constantly occurring. Often the fecal matter from the patient is thrown into the sewer without disinfection. I can readily conceive that under certain favorable circumstances the germs of this disease may gain a lodgment a little above the water mark in the sewer and become dry and detached and carried into the house by the escape of sewer gas or sewer air, as I prefer to call it; and being breathed in and swallowed would produce typhoid fever. I don't think it is a usual occurrence, but I speak of it as a possibility. Now, the city of Dublin, Ireland, has been going through an epidemic of typhoid fever. They have had a number of sanitary experts there to examine into the cause. The water supply had been pronounced pure and free from danger of communicating typhoid fever. The subsoil drainage of the city is very bad; and digging down a short distance they met with foul water, and the disease has been ascribed to this condition. So this matter of drainage must be taken into consideration as well as providing a pure water supply.

Now, as to what boards of health may do. In the first place boards of health should have a report of every case of typhoid fever that occurs within its jurisdiction. Under the law of Ohio, as amended last winter, physicians are required to report to the board of health every case of typhoid fever, but the rule is not generally enforced. Consequently, boards of health are usually powerless to deal with first out-

breaks of typhoid fever. If we assume, for instance, that typhoid fever always comes from a pre-existing case, we may suppose that a village or town is free from the disease and some one comes into the town and is taken sick with typhoid feyer. We have been shown, by a paper on disinfection, that it is possible to absolutely destroy the cause of typhoid fever contained in the discharges of the patient; but if boards of health have no knowledge of the cases, and if the attending physician is careless and takes no steps towards disinfection, the discharges may be placed where the water supply will be polluted and you will have an outbreak of typhoid fever, and it may then prevail in this town for a number of years. The first point I would make then is that boards of health should insist that physicians report promptly every case of typhoid fever. Then I should have boards of health assure themselves that disinfection is being properly carried out in every case. While our physicians heartily co-operate with boards of health in the prevention of disease, and while a majority of them are capable of looking after disinfection, still there is great carelessness in that respect, and some of our physicians are not properly informed in the use of disinfectants. For instance, a few years ago inquiry was made in regard to the practice of disinfection by physicians in this state in cases of typhoid fever. More than fifty per cent, of the replies received, and quite a large number were received, stated that copperas was used in disinfecting the discharges of typhoid fever patients. Now, we know positively that copperas is not a disinfectant. Therefore, I say that boards of health, being responsible for the prevention of disease in their towns, should assure themselves that disinfection is being carried out. I would say that the State Board of Health furnishes a little pamphlet on typhoid fever, containing information on the prevention of this disease, and we furnish this to boards of health; and a copy may be left with the family. But I think that personal instruction should be given by the physician in charge.

The question of quarantine of typhoid fever has been frequently referred to; is it necessary to quarantine in typhoid fever? I think not. Typhoid fever is not communicated through the air except in the manner that I have indicated. There is no danger in going into a room where there is a case of typhoid fever, unless you eat or drink something polluted, and I do not think it necessary to quarantine a case of typhoid fever. Neither do I think it necessary to placard the house. That has been done in some towns, and has made some trouble for our boards of health.

Then as to burial precautions that should be taken in this disease. In other diseases, infectious diseases, we provide that there should be private funerals or burial services. I do not think that is necessary in typhoid fever. Formerly the rules of the State Board of Health in regard to the transportation of the bodies of those who had died of ty-

phoid fever provided that they should be sent in a hermetically sealed coffin, but that was to be in harmony with the National Baggage Masters' Association. But the Board has amended these rules so that they do not require that bodies of persons dying of typhoid fever shall be shipped in that manner. I was to say nothing on the cause of typhoid fever, Mr. President.

The Chair—No, sir. Now, gentlemen, the papers are before you for discussion.

Dr. Calvin—Wouldn't it be well to include typho-malarial fever, because that is a horse of about the same color?

The Chair—Yes, we are going to speak on that subject, too.

Dr. Calvin—I move that you designate some one to spend five or ten minutes on typho-malarial fever.

The motion being seconded, prevailed.

Dr. Hedges—I suggest that our friend, Dr. Buechner, be requested to speak on this subject of typho-malarial fever. I think he is very competent to speak on that subject.

Dr. Buechner—I don't think that typho-malarial fever has any reason to be admitted, that it does not, in fact, exist. I think it was very unfortunate that that name was introduced in medicine. What is typhomalarial fever? It is simply typhoid fever, probably somewhat modified I had an opportunity to see the disease hundreds and hundreds of times twenty or twenty-five years ago in the Mahoning valley. It was then a very malarial district, and almost every case of typhoid fever that I had there you would see more or less of that malarial influence, which frequently prostrated the convalescence of the patient by malarial attacks coming on after the typhoid symptoms had time to disappear. But in cases of that kind, where you have the rose-colored spots, where you have the specific abdominal symptoms, I think it is typhoid fever and nothing else, and that it should be treated as such. I find very frequently now days that some of our physicians try to creep out in reporting a case of typhoid fever, because the State Board of Health does not say expressly that cases of typho-malarial fever shall be reported. Now, we put a card up in cases of typhoid fever, and you all know how terribly opposed some people are to that. They think it is a terrible thing to have a red or yellow card on the house, and their physician is accommodating enough to leave that card off. Now, I think that name of typho-malarial fever is a most excellent hole to creep out of, and while we talk about typhomalarial fever I can't understand it. Call it typhoid fever and I think you are a great deal nearer the truth than if you call it typho-malarial

The Chair-Now, gentlemen, we are ready for the discussion.

Dr. Prince, Piqua—This discussion of typhoid fever is a very important one, and it interests me largely. I come from a locality where the entire year round, probably, typhoid fever exists, and a very common

inquiry of families that the doctor enters during sickness is, how many cases are there of typhoid fever in Piqua? In regard to the communication of this disease, I have no reason to doubt but that contamination of the system with typhoid fever germs is usually caused by the water supply. We find it so in Piqua. Our people drink well water there mostly. We have had our water examined by chemical analysis, and it has been found to be contaminated, and I attribute the existence of typhoid fever in Piqua to that source. So far as typho-malarial fever is concerned, I discard the theory in regard to that. We find that in Piqua it is a mild form of typhoid fever with some of the symptoms probably absent; but on close examination we find more or less typhoid symptoms in the case. You will find that it commonly exists in the summer months when vegetable decay is extensive. I think it would be wise for health officers who come in contact with these cases called typho-malaria to investigate thoroughly the condition of the case and to act accordingly.

Dr. LeFevre—I would like to go back a moment to the first topic, and say a word in regard to the germs. The idea has been held up that typhoid fever is caused solely by one germ, the bacillus typhosus. Now I would like to ask, and have Dr. Probst or some one answer the question, if the tendency of bacteriological investigation to-day is not in the direction of the theory that more than one germ causes typhoid fever? I have been watching this matter somewhat and I think that the consensus of opinion is now in favor of that view. There are some things that would lead us to think that more than one germ would cause it. It seems to me this a matter of importance with regard to sanitation.

The Chair—I guess Dr. Buechner can answer that for you.

Dr. Buechner—I have not found, and I have investigated the matter a good deal, that any authorities claim that typhoid fever was due to anything else but the bacillus typhosus.

Dr. Leick—The question I want to ask is regarding the reporting of typhoid fever cases. What plan are we to adopt in case the physician fails to report it, or in ease the physician fails to placard a case of scarlet fever. I have one man in my town that positively refuses. Now, what recourse have we in law, is the point I would like to ask?

Dr. Probst—I would say that the statutes of Ohio provide that physicians shall report to the board of health every case of typhoid fever which they are called to attend. Now that is plain, and your recourse is to arrest any physician that you know fails to report a case of typhoid fever, and bring him before the mayor and charge him with having violated the law.

'Mr. Burdette—I am a member of the board of health of Jackson township, and we have a good deal of typhoid fever. We have one family in our township that has been sick thirteen weeks—two deaths, and more likely to die. The doctor has never reported two cases to me of typhoid fever. We find the well to be pure and all right, as near as

we can judge. The privy vaults, etc., are a proper distance from the well. In the two cases that died they burned up the bedding, not by our authority, but by their own authority.

Dr. Moore-In regard to the cause of typhoid fever, I am fully in accord with the reader of the paper. I believe it to be specific, and that there is but one cause; and that the reason it has been attributed to filth is that filth is a good breeding place for the germ. I arose more particularly, however, to speak on the subject of the communication of the disease, the medium through which it is communicated. Water has been spoken of as the most common medium. Ice has not been mentioned, and it is of course frozen water. A great many are under the impression that freezing destroys the germs of many diseases, and especially of typhoid fever; but I think there are many instances on record showing that it is not the case. We have had some typhoid fever in our place during the last year, and three cases died. The cases who died were in families who obtained their ice supply from a dam just south of town, into which two sewers entered a short distance above the dam. And although the matter has not been demonstrated beyond a doubt, vet many of us think that there is no question at all but that those persons received the disease through the use of this ice. Some two or three years ago I attended a family in the country in which there were nine cases of typhoid fever. There was but one of the family escaped, the eldest daughter. As soon as I discovered what the trouble was I had them boil all the water they used, suspecting the water supply. Some of it was sent to Washington City to be analyzed, and some of it, I believe, to Columbus. And it was stated that there was a great deal of organic matter in it, and that there was no doubt it was the cause of the fever. Now, this well was a filled-up-well; that is, a well that had been dug and then an iron tube of perhaps five or six inches diameter placed in it and the well filled up. A large part of it had been filled up with the surface of the yard around it that had been used for fifty years as a place to throw slops, and there is no question but that in this case the typhoid fever was communicated in that way.

Mr. Howland, of Marysville—Our health officer not being present on this occasion I stand before you, not as an M. D., but merely as a member of the board of health of our village, and what I say has not been learned from books but by experience. Having had in my own family cases of contagious diseases, I would merely suggest to this convention that I think that cleanliness and disinfection in the room of the patient is what we should always have where we have contagious diseases. We should burn up everything in the way of muslin or anything that is used about the patient, and bury all the discharges and phlegm arising from the patient. I merely offer this as a suggestion, knowing it from experience.

Dr. Hedges—I believe that we all agree, as physicians, that typhoid fever is communicable. We may differ as to the cause of the disease,

whether it is a germ or whether it is not. It matters very little in this discussion, I believe, whether it is a bacillus or whether it is something else. It is a communicable disease, and usually communicable to the subject through a polluted water supply. Dr. Moore just spoke of a well that he believed caused typhoid fever in a certain family. Now that well was filled up by soil from the surrounding lot. If that well was polluted how was it polluted with typhoid fever if the typhoid germ must cause it? I would like to know that. How do we get typhoid fever twenty miles out on the prairie where there has been no case of typhoid fever to cause it. Filth will either cause or help to cause typhoid fever.

Dr. Beuchner—It never caused typhoid fever.

Dr. Hedges-Doctors differ. Then I see very little use in trying to keep clean. I insist on my people, where I treat typhoid fever, observing the strictest cleanliness; changing the clothes every day, the thorough boiling and washing of linen, and disinfecting all excreta—and I prefer burying it. It is unnecessary, as the gentleman from Marysville said, to burn linen. Thorough boiling, with good strong soap, will kill any poison of any disease. There is no use to burn it. But thorough cleanliness and disinfection will hold typhoid fever in check any time. Stop the use of the polluted water. I insist on people boiling all the water that is used if I know we have a case of typhoid fever. One trouble in typho-malarial fever until the whole family or neighborhood is infected and several deaths occur, and yet physicians insist on calling it typhomalarial or malarial fever. I don't believe it is necessary to placard a house infected with typhoid fever. I don't do it, and don't believe it is necessary

Dr. Sutton, of Zanesville—I believe typhoid fever can be communicated through the atmosphere if you come in close contact, and it is only after an experience that I had a very short time ago that I have regarded it in that manner. I will tell you why I think so. About a year ago I was called to the sheriff's office in our city to see a sick girl. On my second visit I pronounced her disease typhoid fever. She lived in the country, about seven or eight miles out, and she had been living with the sheriff and had not been to her home for six months. parents came in that day and removed her at once to her home. family consisted of father, mother and six children. The family were very healthy, and had not had a physician in the house for six years-The house stood on a hillside. Before this girl was taken home I advised them that the disease was typhoid fever, and that they should be extremely careful where they deposited the excreta. So they poured boiling water over them and buried them below the house on the hillside. In two weeks from that time another sister was taken with the disease, and in a few days another, until the father and five children were all taken. The mother and an infant one year old alone escaped. They were all typical cases of typhoid fever. The people were scrupulously clean in every particular. In a few days, while I was attending them, I understood there was sickness in the sheriff's family. I went to the house to investigate, and I found one of his own children sick with the same symptoms, and on investigation I found that the bath-room was ventilated through this girl's room, and that this child had at times slept with this girl. Now it there was any possible way for this family to have taken this disease under these circumstances, without having gotten it through the atmosphere, I could not understand it. I reported my experience to our medical society in Zanesville, and it afforded them a very interesting subject for discussion. The symptoms were reported in detail, and the diagnosis was not questioned, and the fact that this child had occasionally slept with this girl, and that the bath-room was badly ventilated was positive evidence.

Dr. Collins, of Toronto—I believe the day is not far distant when there will be a law condemning all wells. Strictly speaking, a well is nothing more or less than a catch-basin for all the filth that can be carried by the water that supplies that well. The water comes in for many weeks, and then gets low and gets very strong. If that same amount of typhoid poison was thrown into the Ohio river I don't suppose it would do any harm.

A member—I believe firmly, with the members that have preceded me, that we either eat or drink typhoid fever in ninety cases out of a hundred. But the ninety have been discussed, and I don't think that boards of health should lose sight, in giving directions to their peopleof the ten cases out of a hundred. In our little village, and a healthy one, we think, we had an epidemic of typhoid fever from a spring. Our friend, the Secretary o' the State Board of Health, examined the territory and pronounced the water supply as the source. The last case in our community, a lady, took sick of typhoid fever. Directions were given, as is usually done, that the drinking water should be boiled-This lady took great pride in stating that for the last three months previous to her sickness she never had partaken of any water or anything that had not been boiled. And yet she had typhoid fever, and an unmistakable case, for she died. I think it is well to take great precautions not only with the drinking water, but that all other sources of danger should be pointed out.

Dr. Blacker—Several times I have wanted to get up and say something, but I have succeeded in finding out everything I had in mind except one. I desire to speak of disinfection. Now these various germicides act first rate under certain conditions. There is scarely one physician in a hundred that can tell when the conditions are all right. Now, why not simplify this matter of disinfection and reduce it all to boiling. It seems to me you can get boiling water cheaper than you can any other germicide. I don't see why we can't use that better than anything

else. But the question I want to ask is this: If these various germs cannot resist a temperature above 140, why should Dr. Hoover ins st on boiling a piece of linen an hour and a half or two hours. Why isn't five minutes as good as a month?

The Chair—I would like to ask the gentleman, before he sits down, how he would boil his patient?

Dr. Blacker-Well, I don't believe I should try to boil one.

The Chair—How would you disinfect him?

Dr. Blacker—In that case I don't know any better way than Dr. Miller told us yesterday, and that was by the very best form of clean-liness that you can institute.

Dr. Caruthers—Some of us have to leave on the afternoon train, and would like very much to have the subject of smallpox discussed.

The Chair—Before closing, I think Dr. Buechner has something to say on the subject of typhoid fever, and I promised he should have an opportunity. What is the will of the convention?

(Calls for Buechner.)

Dr. Buechner-The bacillus of typhoid fever may, I admit, be brought into the system by breathing the bacillus into the mouth and swallowing it; but I deny that it ever can be introduced into the system and cause the disease through the respiratory organs. But after the bacillus has entered the system, if it finds there a suitable field to grow. it multiplies so rapidly that it has been figured that one typhoid tever bacillus may produce over sixteen millions of similar germs in twentyfour hours. In how far it acts as a poison is not exactly determined yet. Some claim that a poisonous substance is produced by this bacillus, which is called typho-toxine, and that this causes the peculiar symptoms of the disease. In regard to typhoid fever being produced by filth, or anything of that kind, I would remark that the most careful experiments and particularly the inquiry by the English Rivers' Pollution Commission, has shown beyond a question of doubt that water polluted with fecal matter may be used for years without causing typhoid fever at all, until an imported case produces the virus.

Dr. LeFevre—Mr. Chairman, I move that Dr. Probst be called upon for remarks regarding the cause of typhoid lever.

The motion being seconded, prevailed.

Dr. Probst—Mr. Chairman, I think there is now some good authority in favor of the view that the ordinary germ found in the intestines of healthy people may, under certain conditions undergo changes which give it the power to produce disease—that is, produce typhoid fever-Recently the *British Medical Journal*, which is recognized as an authority, in an editoral on the subject, took the ground that such a thing is possible. Dr. Vaughan, of Ann Arbor, Mich., who is, perhaps to be considered an authority on this subject, firmly takes the ground that there are a number of germs to be found in drinking water which produce all

the symptoms of typhoid fever. He has examined the water supply in connection with all outbreaks of typhoid fever in Michigan for several years, and he has never been able to find in any of these cases the so-called Eberth bacillus. The principle point is that we should not drink water that contains fecal matter, even though we may know that it does not have the excreta of typhoid fever patients in it, for there is a possibility of producing the disease by these other germs.

The Chair—Gentlemen, it is now ten minutes of eleven o'clock, standard time, and in that time we will have to discuss small-pox, under the three divisions—diagnosis of, prevention of, and vaccination.

I will call on Dr. Probst for the first paper, "Diagnosis of Small-pox."

### DIAGNOSIS OF SMALLPOX.

By Dr. C. O. Probst, Secretary State Board of Health, Columbus, Ohio.

Mr. President: A great deal might be said on the diagnosis of smallpox if this were a medical me, ting.

It is a momentous question to every physician. At any time he may be called to a case of smallpox, and by failing to recognize the disease, start an epidemic for which he is sure to receive great public censure.

And yet smallpox in its modified form is often most difficult to recognize, and many excellent diagnostitians perfectly familiar with smallpox have been led astray

Boards of health are also much concerned in the diagnosis of smallpox. It is seldom now-a-days that smallpox becomes epidemic in a community except through a mistake in diagnosing first cases of the disease.

The epidemic which occurred in Pomeroy in '92 was caused by failure to recognize the nature of the disease until after hundreds of people had been exposed. As is often the case, smallpox was mistaken for chickenpox.

Six months later a case occurred in Akron. Here again a mistaken diagnosis gave rise to an epidemic. The recent Muncie, Indiana, epidemic is another instance of chickenpox confounded with smallpox.

Health authorities, and the people as well, now so thoroughly understand how to prevent the spread of smallpox that the prompt recognition of the first case in a community is at once followed by the enforcement of successful measures to arrest the disease. When smallpox has become firmly established in a place, however, there are so many avenues for infection that it becomes exceedingly difficult to stamp it out.

But I need not spend more time in establishing the supreme importance to health authorities of the early diagnosis of smallpox. It may be said that this is entirely in the hands of the attending physician, and that boards of health are powerless to avert the evils of mistaken diagnosis. While this is, unfortunately, in great part true, something may be done by health authorities to this end. In the first place only qualified physicians should be permitted to practice in Ohio. It is a disgrace to our State that human life is now at the mercy of anyone who has the effrontery to hang out a sign with M. D. on it; and boards of health should be interested in legislation to bar all but capable men from the medical profession. Second—As chickenpox is the disease most frequently mistaken for smallpox, it should be reported to the health authorities. This is required in many places as a guard against mistaken diagnosis. In this connection it should be mentioned that chickenpox is so rare a disease in adults that some authors express doubt of its occurrence. The report of chickenpox in an adult, at any rate, should certainly lead to an in-

vestigation by the health authorities. In the Pomeroy epidemic where smallpox prevailed unrecognized for nearly six weeks, several adults were affected; and it was not until one of them died that the disease was acknowledged to be smallpox and not chickenpox.

Third—Boards of health should be thoroughly impressed with the fact that it is their duty, where there is the least doubt as to diagnosis, to act promptly and give the public the benefit of the doubt. Doctors often disagree in diagnosis, and in smallpox the fatal mistake should not be made of waiting for developments to see who is right. When smallpox has become epidemic in a place the health authorities should send a physician to examine every suspicious case reported, whether by physicians or laity, and quarantine all doubtful cases for the full incubation period of smallpox—fourteen days.

Fourth—Any eruptive disease in a newly arrived immigrant should be regarded with suspicion and should be investigated. It was a case of this kind that introduced smallpox into Akron.

The State Board of Health receives from the Commissioner of Immigration at the Port of New York, a list of the names and destinations of all immigrants bound for Ohio, who arrive on infected vessels. The local health authorities are immediately notified of the fact, and should look up such immigrants and keep them under surveillance for ten days or two weeks. When smallpox develops on shipboard during voyage, the ship's surgeon usually vaccinates all the steerage, and others it exposed. When the ship enters port there is perhaps disinfection of clothing an 1 baggage of immigrants, but no one who has been exposed to smallpox is detained unless he refuses to be vaccinated.

When we consider the number of unsuccessful vaccinations due to inert virus and other causes, it will be seen that immigrants from a smallpox ship are an element of danger that should be looked after by the local authorities.

When smallpox prevails in a community and strict quarantine is not maintained, local health authorities should be watchful of individuals coming from that community. This, however, is scarely possible except for villages and rural districts.

A man who was once living in Muncie, Ind., during the late epidemic there came to Ft. Recovery, Ohio. Shortly afterwards it was reported that he was ill. The health authorities with commendable foresight sent a physician so see him. He pronounced the disease smallpox. The patient was promptly isolated, the house was quarantined, and no other cases occurred.

In conclusion, I would urge that boards of health encourage physicians to immediately report a case in which there is the least suspicion of smallpox. Physicians naturally shrink from the responsibility of announcing smallpox, and usually wait a day or two to be sure of the diagnosis. It would be to the public interest to have such cases at once reported to the board of health as "suspicious," and have them treated as such, until the diagnosis is placed beyond doubt.

The Chair—Shall we adopt the same method with reference to these papers that we did with the others, and immediately take up the next paper?

(Cries of yes, yes.)

The next paper is on the "Prevention of Smallpox," by Dr. Kohler, Health Officer of Akron.

### MEASURES FOR THE PREVENTION OF SMALLPON.

By DR. A. A. KOHLER, Health Officer, Akton, Ohio.

MR PRESIDENT AND GENTLEMEN: We all know that smallpox is one of the most contagious and most dreaded disease we have to deal with, and although more

deaths occur from diphtheria and scarlet fever during the year, the laity, and they are the ones we must protect, are ceased with holy horror when a case of this loathsome disease occurs in their locality. In their anxiety to convey the news to their friends, the one case is usually magnified into one hundred, and the board of health is accused of not giving the facts of the situation to the public. Not only your own people, but those throughout the state will censure you. For that reason issue an official daily bulletin giving the number of new cases, number of deaths and whatever other information is advisable. As I consider vaccination the only preventative of smallpox, and as this is the subject of a separate paper, I will confine my remarks to what a board of health should do if a case of smallpox occurs in its jurisdiction. Now, in my mind a board of health should u t only know what to do, but should be prepared to do it in case they are unfortunate enough to have this disease break out in their locality. Every city of any size should have a contagious disease hospital a detention hospital and an ambulance, and these should be located as near the center of the city as possible so as to be easily reached from every quarter. I assure you, gentlemen, I fully appreciate the obstacle placed in the way of the board of health in obtaining the above. The people will say it is an unnecessary expense. But in order to fight smallpox successfully every patient should be removed to the contagious disease hospital and in order to overcome the objections of so many people to the removal of patients to such a place, the hospital should be a substantial, roomy and presentable building, with as many of the modern conveniences as possible. Had the city of Akron had a good, roomy contagious disease hospital located near the city, I am positive there would not have been one-third the number of cases there last winter; the disease would have been stamped out much sooner, we would have had less deaths, and it would have saved the citizens and business men thousands and thousands of dollars. And for all her experience Akron to-day has not a good contagious disease hospital.

As the people in general seriously object to patients returning direct to their homes from the pesthouse (as it is commonly called), a detention hospital located near the contagious disease hospital, where the patients can spend the first couple of weeks after being discharged, will save the patient as well as the board of health a great deal of annoyance. By having your own ambulance located at the hospital, ready for a call at any time you will save time and inconvenience in removing the patients.

As the great majority of the boards of health throughout the state do not possess these conveniences the next best thing to do is to isolate the patient and procure a person who has had the disease to nurse him. Place a strict quarantine on the family and all persons who have been exposed and vaccinate them as soon as fresh vaccine points can be obtained. Do not neglect to telegraph for points, for by vaccinating within twenty-four hours after exposure the chances are the person will not take the disease. A person who is in touch with the board of health who fully realizes the gravity of the situation, one who is not afraid of hard work, should be employed with the power to employ assistance if necessary. He should be allowed a liberal compensation, liberal enough for him to devote his entire time to the work.

After the patient and all persons exposed have been quarantined, discover, if possible, the origin of the disease, and if it is shrouded with as much mystery as it was in Akron a year ago you will surely have the pleasure of lying awake nights to unravel the many theories advanced. Unless the origin is discovered you will only grope along in the dark wondering where it will all end. How convenient it is to call the festive tramp to account for the outbreak of smallpox. I should advise every board of health, if the occasion arises, not to be led astray by that very easy solution of the mystery. The Akron Board of Health worked in the dark six long weeks; we ran down several tramps, and finally it was reported that we had

found the poor tramp and had cremated him in the cupola of the Taplin, Rice & Co,'s foundry from where the first case was taken. When, finally, with the very valuable assistance of Dr. Probst, our genial secretary of the State Board, we did find the origin, it was as if we had been released from some dark and dismal chamber and allowed once more to enjoy the glad sunshine of day. It seemed as though the very atmosphere was purer and ladened with sweet voices that were continually singing "now you will be successful in fighting this dread disease." Unless you find the origin, even after you have stamped out the disease, as you think, you will live continually in dread of another outbreak.

It is generally advised to place guards over houses containing smallpox. Unless good, reliable men can be obtained, instead of helping to check the disease, by their carelessness they will hasten its spread. In the country where the houses are far apart, the guard may be a necessity, but in a city you will find the neighbors to be the best guards obtainable. Employ a good, live sanitary policeman and have him visit each smallpox house several times during the twenty-four hours, so as to supply every want of the quarantined families, and you will be saved a great dear of trouble and expense besitles having better service. Issue an official order calling upon everyone in the locality to be vaccinated. Arrange means by which the poor can be vaccinated free. Do not wait, thinking the disease can be stamped out with the first few cases and thereby lose valuable time and very likely have an epidemic on your hands. To see that your order is complied with, divide the city into districts and employ physicians to make a house to house visit and vaccinate all those not already vaccinated, who cannot furnish a good reason not to be. The physicians should make at least three visits, more if necessary, in order to satisfy themselves that the vaccination has been successful, for a sore arm does not necessarily mean a successful vaccination. Naturally there are some people bitterly opposed to vaccination; people who would fight the board of health through all the courts before yielding to this order. To bring this class of people into line and avoid all trouble, go to their employer or business associates, lay the case before them, and with their assistance your orders will be obeyed.

In removing the quarantine from smallpox houses, every precaution should be taken. Better have them quarantined a week too long than run any chance of them spreading the disease by being released too soon. The health officer or sanitary policeman should be instructed to personally see that the house and premises, as well as the family, are thoroughly disinfected before the quarantine is removed.

In a time of smallpox the movements of the board of health are watched with a good deal of interest, and it may be with anxiety and apprehension. By acting promptly and with intelligence you will soon gain the respect and confidence of the people, and with their co-operation the responsibility will be much lighter to bear.

The Chair—Gentlemen, the next paper is on "Vaccination," by Dr. R. Harvey Reed, Health Officer of Mansfield. [Since preparing this paper the doctor has moved to Columbus.—Ed.]

### VACCINATION.

By DR R. HARVEY REED, Health Officer of Mansfield, Ohio.

MR. PRESIDENT AND GENTLEMEN: It is not my province to-day to go into the history of vaccination, and explain anything in regard to that, as we take it for granted there is not a man in the audience to-day who is not familiar with the discovery and history of vaccination. Neither shall we take up your time in discussing whether vaccination should be made compulsory or not. I think there is no question about that. I think that question has been fairly settled in the minds of all physicians and all progressive health officers and boards of health. The question which we shall take up this morning, and the one which we shall dwell upon, is the method by which you should vaccinate. I am aware that when I take up this question and advocate the method which I shall advocate, I will probably meet with opposition from this entire body, from the fact that I do not know of but very few physicians that have adopted the plan I have used for years in vaccination; but after years of experience and years of disappointment, backed by hundreds of cases of failure, I sought out a better plan, and what has proved to me to be a better method, and I stan't ready to produce statistics to prove that it is a better plan. I am aware that ordinarily the physicians throughout Ohio as well as throughout the United States, advocate the use of ivory points for vaccination; yet at the same time I will put it to you gentlemen who have vaccinated, or attempted to vaccinate with them whether you get, as a rule, over fifty per cent. of successful vaccinations, in the ordinary run of vaccination cases with ivory points? The highest authorities I have seen only give eighty per cent. of successful vaccinations with points, and when you come to vaccinate a large community of children, and are made responsible for this work, it is very embarrassing and expensive when you are obliged to revaccinate at least twenty per cent. of all the cases that come to you. For this reason alone we should adopt a system, a plan of vaccination, that will give us better results. In considering the financial part of this question I may say, you pay ordinarily one dollar for ten vaccine points. But when you get them, to save your soul if you were put on the witness stand you could not tell where those vaccine points came from. They are not registered. You don't know whether they were dipped in cow virus or humanized virus, or whether they are old or new, or dipped at all. You don't know whether they have been kept clean or not, but you buy them and proceed to vaccinate, and to your disgust you find that from fifty to eighty per cent, of your patients come back to be revaccinated. But that is not ail. The vaccine virus companies will always advise you to use the points. Why? Because they will furnish you ten points for one dollar; and on the other hand they will furnish you a grain of pure virus for one dollar. With that one grain of pure virus I can vaccinate forty · children, and do it well. On the other hand you can vaccinate ten with the points, but from fifty to eighty per cent. of them have to be revaccinated. Further, in the selection and use of points you have no assurance, as I have said, that your points are clean. Now when you have to confront the question of compulsory vaccination it behooves you, as boards of health, to surround yourselves with a fortification that will prevent you from being prosecuted by parties for improper vaccination. You have no right to vaccinate a child of mine or a child of anybody, unless you know you have absolutely pure virus and can trace it to its origin. If you were to vaccinate a child and inoculate it with syphilis or erysipelas you are liable in the sight of the law, especially if it can be shown that you have not taken proper precautions in the procuring of virus to avoid it, Never buy your virus except from the producer himself. Get it as soon as possible, with as few people to handle it as practical, between you and the party producing it. Be sure that the party procuring it has his cows registered, and the date and registry of the virus you receive from the individual heifers from which it is produced. Have the certificate of these parties sent to you, so that you can trace them back to the exact cow and the exact day and date when the virus was obtained by the party from which you obtained it-This you cannot do if you rely upon your druggist or any intermediate supply house. I have found from experience, and I want to say here that Mausfield had compulsory vaccination long before the State Board of Health made it com-

pulsory, and consequently we have gone through a siege of compulsory vaccination, and during this siege we have found, to a certain extent, why people object. You know some persons bitterly fight vaccination, and even certain churches are opposed to it, and look upon vaccination as they would a viper. Why? Because in almost every community you have seen bad results from vaccination. It is not from vaccination alone, but from improper vaccination and the use of bad virus. Take our own city; last winter we had a child that died, and its death was attributed directly to vaccination. On investigation I found that it had been vaccinated with a point, and following that was ervsipelas, and following that was death. I have had cases come to me with bad arms and legs, affected with crysipelas, and in almost every instance in which that trouble occurred it was the result of using points, or improper, dirty, vaccination. Now, if we remove that feature of the case from the patient, if you will use absolutely pure virus, you can avoid these difficulties. By this means you will take away a great obstacle in the mind of your patients, who will soon regain confidence in vaccination, and will not fear to be vaccinated. Before I show how I vaccinate, I want to produce a few statistics that I have on record, and which I can back by the records now on file in the health department of Mansfield. I have vaccinated a little over fifteen hundred children by this method of vaccination, and I have had a failure of one and one-fourth per cent. Now if you can produce such results with your points, I would like for the man to step forward and produce them. This year I vaccinated seven hundred and seventeen, with seven revaccinations—less than one per cent. Now you may say, how do I know?

Gentlemen, we have a book in the health department of Mansfield in which we take down the name of every child we vaccinate; we take the age, we take the parents' names, we take the street and number of the house the child lives in, and the school the child attends, and then we register in this book whether he is vaccinated with bovine virus or humanized virus. I don't use humanized virus now, but I did. Not only that, but we put down the number of the virus used opposite the child's name, together with the date. We also register whether it is a primary, secondary or revaccination. Now by primary vaccination I mean the first vaccination the child has received. Secondary vaccination is vaccination of a child that has been vaccinated successfully, or supposed to have been vaccinated successfully. Revaccination is where I have vaccinated a child and it failed to take, and it comes back for revaccination. Now I say that I have only had, out of 717 vaccinations this year, but seven revaccinations. I require them to come back and show their arms in a week; and this is complied with in a majority of cases. Each child is turnished with a certificate and is again investigated by the sanitary policeman at the various schools, and if it is not successful they must come back. I am fully convinced that, as compared with the usual method, it is much more specessful, and gives much better results-Now, I shall endeavor to show you how I do this, and whilst I claim for it the name of aseptic vaccination, I do not claim that it is absolutely aseptic; but I do say you should take all the care possible to avoid the introduction of filth into the woundand thus prevent the introduction of germs of any kind that might produce anything else but a pure vaccine sore. If you do this you will save yourself from any danger from a legal standpoint, besides a great deal of satisfaction to yourself as well as the patient.

In order that I may show you this method, I have requested two or three gentlemen to come here this morning, and I will vaccinate them before you. This is a package of vaccine virus. I have had a great deal of trouble in securing reliable virus. This has finally been obtained from the Union Vaccine Co., of Englewood, Ill., and it was only after writing to almost every company in the country that I was able to obtain it in this way. This lymph has been obtained by tapping the pustule and obtaining the pure virus, and drawing it out on a clean aseptic glass

slide. It is then prepared in two ways: The one I call tears, which is dried virus, and as you see it looks a little like tears. The other is called pulverized virus. In preparing this they take the dried virus and pulverize it in a clean glass mortar. The pulverized virus is easier to use. In the first place, both kinds are kept sealed, as you see, in rubber tissue, carefully protected from any extraneous material. I next use two aseptic glass slides. For keeping these slides we have an ordinary pill box, something that everybody can get hold of, and in this pill box I put a smaller pill box, for the purpose of keeping my slides clean and ready for use. To make the slides, I take an ordinary piece of window glass like this, (one inch square), clean it with a little alcohol, and on that I place the virus. I next have a clean tumbler, with boiled water. After washing the slide with boiled water and alcohol, to be sure that I have nothing septic on it, I take the package, which I will open before you, which you will see is an outside envelope beside another envelope, and is numbered 905,296; for this I have the certificate of the Union Vaccine Co. at my office. I intended to bring that with me but I forgot it. It was taken December 29th, 1893. Now, that may appear like old virus, but I want to say that virus kept in this way is as good at the end of the month as at the beginning, and gives just as good results, while the points do not. This is kept perfectly free from the changes of atmosphere and from the admission of septic substances. You will observe it is wrapped in rubber tissue; around that is tissue paper, next to that is cotton, then another piece of tissue paper, and now we come to a sealed piece of rubber tissue in which we find the virus in still another piece of paper. There is a grain of pulverized virus, which I will place on one of the glass slides. I only prepare just the amount of virus I think I will need to use in one day. I have here in this bottle some boiled water, and will put a few drops of this sterilized water on the virus to moisten it. I do not use a scarificator beyond that of a sharp bistory, or rather a tenotomy knife. I first put it in alcohol, and wipe it off with a towel that has been boiled.

A Member—Is that how you perform after making one vaccination? Dr. Reed—I am going to show the whole business. Now observe that the virus prepared in this way is almost transparent (holding the proposed virus between two glass slides, up to the light) when I place these slides together; there is no blood in it. It is perfectly pure virus, and is now ready for use. If you are conducting a series of vaccinations, it is easy to keep this virus in this way all day. Every morning you should mix up a fresh lot, and keep it in this manner in between the glass slides, which are placed in a pill box, and is ready for use during the day. The slides of yesterday are cleaned before they are used for another batch of virus, the same as you have seen me do this morning.

The next thing is to get the patient in proper shape for vaccination. A Member—After mixing it, has it to be used within twenty-fours hours?

Dr. Reed—Well, no, but I think it is better to do so. After drying, it will keep for a day or two without any danger; but I think it is better to use what you mix the same day. Half a grain is plenty for twenty, and the next day mix the other half of it, or such an amount as your needs may require. This water has been thoroughly boiled this morning, and should be kept in a closed vessel, which you can do by having a covering of a piece of sterilized cloth to lay over the vessel while using it. I use a tall,

glass vessel, easily covered, instead of this pan, but they forgot to put them in for me, consequently I use this pan instead. (At this point the patient presented his bared arm.) The arm is now cleansed; not absolutely antiseptic, because we do not use an antiseptic in cases of this kind; if we did we would probably lose the effect of the virus. But the arm is cleansed practically clean, so as to avoid any infection, at least any possibility of it as far as practicable. Next we clean the knife with a little alcohol, and we should have perfectly clean water to dip that in and a sterilized towel to dry the knife on. Now comes the point of puncturing the arm or leg, as the case may be. There is no necessity of going down under the skin. The very slightest puncture you can make, just simply to draw the red; the merest scratch is just as good as burrowing under the skin and punishing the child in that way. I know there is practically no pain, for out of all I have vaccinated, not more than half a dozen little children have complained, and I know that you can not vaccinate them with a point without getting up considerable of a rumpus, at least I never could. A very small portion of virus is all that is necessary to use. You see that I have only just drawn the red, although I made several incisions. It is the custom of some to dry the arm after the operation, and I think there is no objection to it, but where you are vaccinating a large number, I don't think it is so practicable. To save time, I take a piece of isinglass plaster, carefully prepared—the best I can get—and put a small portion of this over the vaccine point for two purposes: First, I do it to save time, because it requires the party to stand around some considerable time and dry the blood on his arm, and keep it from soiling his sleeve. These pieces of adhesive plaster are cut prior and kept in a little box by themselves. I do not touch them with my fingers any more than I can help. I dip them in the sterilized water, and apply them to the arm, and tell the patient simply to allow them to remain one or two days, as it is only put on to keep the parts elean. By doing that the patient can put down his sleeve and go about his business immediately. Two days afterward moisten the adhesive with a little water and remove it. As I have said, I have had only one and a quarter per cent, failures since I adopted this plan, and I have not had a single case of erysipelas this fiscal year, and I can attribute it only to being careful in vaccination and the kind of virus used. I believe if you gentlemen would adopt a plan similar to this, a plan by which you will guard against the introduction of septic material in the virus of the wound, and get virus in the manner this virus was obtained, you will avoid any trouble. If there is any one here who wishes to try this virus, I will be glad to give you the balance of it, and let you try it for yourself. I will now open a package of tears and show you that. This is numbered 905;295, and was taken on December 29th, 1893. This, you will see, is put up in the same careful manner that the pulverized was; but instead of being in a powder, it is in tears which are almost transparent.

Dr. Probst-How long will it keep, Dr. Reed?

Dr. Reed— I have used it with perfect success after having had it two months. Eight weeks after having received the virus in this manner, I used it without any trouble whatever, and had just as good results as at first. I am satisfied that if the state and municipal authorities will press upon the vaccine companies to furnish virus in this way that they will do it; they hesitate to do it because there is not so much money in it as in the points, but pay five dollars a grain for it, rather than use points. Get it direct from the producer. You can buy it by the wholesale if you wish. You can get ten grains at the same time as easy as a grain, done up in the same manner. I will now vaccinate one more and then I will be through.

Dr. Buechner—Is that dry lymph?

Dr. Reed-Yes, sir.

Now, as to the expediency of this kind of vaccination. I think it is much more rapid than the other method. I have usually had one party to make the records whilst I have done the vaccinating, and I have vaccinated forty persons in two hours, and done it easily, because when everything is ready it can be done very rapidly. (At this point the doctor made the incisions on the patient's arm.) Between every operation, or every time you use the knife, it should be thoroughly cleaned. Clean it thoroughly before you put it into the virus, and after using the virusclean it before you go back to the arm, and do not vaccinate any person with a knife that has not been cleaned after having vaccinated the previous patient. From experience, I can assure you that if this plan of vaccination is adopted, and this plan of obtaining virus, and the same care taken in the vaccination, you will do away with all this prejudice against it. It is the accidents that have happened in vaccination that prejudice people. They think it is because they are vaccinated that they get sick. It is not because they are vaccinated that they get sick, but because you have had impure virus or have been careless in your vaccination, or both, that parties have had trouble. In nearly all instances the children of Mansfield have gone to school, except a few days. They have had, except in exceptional cases, a typical sore and a typical crust. When it is done in this way, and the people are assured that no foreign matter will. be introduced in any way in the system, then they will be ready to allow you to vaccinate them and their children. With compulsory vaccination, I think it is your duty as health officers and health boards to see that the children are properly protected. You have no right to do a thing that is going to injure a child's health, or enforce any measure that cannot be done without endangering its life.

The Chair—Gentlemen, before placing this subject before you for discussion, I want to say that we have here the copies of the last annual report of the State Board of Health. They are very much behind time, but this is a matter that we are utterly helpless to correct. The report

goes into the hands of the state printer, and has to take its turn before it can be issued. We also have our health laws here that we will be glad to furnish to local health officers. We also wish that all members or persons who have attended this convention would register. Remember, gentlemen, that you will get a copy of the proceedings; that these proceedings will be printed in full, and that each of you will get a copy. Now the subject of vaccination is before you for discussion.

Dr. Stanton-Mr. Chairman, with all due deference to the opinions of Dr. Reed, I do not see why this method of vaccination has any advantage over vaccination with points. He refers to the difficulty of tracing the points. There is as much difficulty in tracing the powder as the points. He refers to the method in which it is put up—rubber, tissue, etc. Points can be put up in the same way. In regard to the success of vaccination with points; if you will get fresh points, points put up within a reasonable time, and will observe the precautions that were observed in vaccinating in this case by the doctor, you will not have any greater number of failures with points than with the other method. With regard to the failure of points, I vaccinated, in the month of December, 264 children, nearly all of them primary vaccinations. In not a single case did I fail to vaccinate successfully, except with one or two children that had been vaccinated before. In the primary vaccinations there was not a single failure, and I don't think it will show any greater success with the powder than with the points. With regard to covering the vaccination with isinglass plaster, or court plaster, I don't believe it is a good method. I used to do it, and when I did it I had a great many failures, and I believe it is in a measure due to the use of the isinglass plaster. I believe it interferes with the absorption of the virus; and my practice has been, for several years past, not to use it, but to allow the arm to remain bare until the vaccination has become sufficiently dry to replace the clothing. I believe it is better not to use the plaster. .

Dr. Garrigues, of Massillon—I am a little interested in this matter, because, being a physician and a member of our board of health in Massillon, it has come before us in a practical way. We have had quite a trying time within the last four or five weeks, after the State Board had issued the order to have the school children vaccinated. I was very much interested in this matter coming up, because I wanted to know and get the opinions of others in regard to methods that had been used to carry out the orders when the citizens were calling indignation meetings and the members of the board of health were threatened to be mobbed for carrying out the orders of the State Board of Health. We were not only opposed by several physicians in our town, but opposed by a number of the parents of school children. It seemed as though we were just on the eve of having a number of law suits on our hands, when a reprieve came, and time was lengthened. Now, the principal objection that some of the physicians had to vaccinating was that at this time of the year it was un-

reasonable. I have never heard of anything of that kind. I had never heard of there being much difference in seasons of the year for vaccinating. I had supposed that most of it, in fact ninety per cent. of it, was done in winter time, and that if there was any preference in the season the winter season was a little ahead of the warm weather—the summer months. The physicians said May probably was the best month. I think it was because they felt like opposing us, and this was not the month of May. But any remarks on that subject is in the line that I am interested in.

Dr. Buechner-I would like to say something on the diagnosis of smallpox. I fully agree with Dr. Probst that it is sometimes extremely difficult. Now I happen to have had a good deal of experience with smallpox. I have seen it very frequently, and of late years. I was called to see a case that I would not, the first time I saw it, give a certain diagnosis, and the man was broken out badly. I saw him in the evening about nine o'clock, and I sent one of my sanitary policemen there, and I went out early in the morning. As you all know, chickenpox is a disease that is seldom found with grown-up persons, and I never saw such an abundance of eruptions on a grown-up person. I have seen chickenpox on a grown-up person before, but I never saw such a large number of pocks; and the only way that I came to the conclusion that it was chickenpox was that I found the different stages of eruption present at the same time, which you will find in chickenpox but never in smallpox. Now, diagnosis may be extremely difficult, where the patient is affected with varioloid, and has only a few pustules left on him. The physician may be easily mistaken. I know an old practitioner in our town who called me in one day and said that he had treated a case as intermittent fever, and the second case was taken down and had some eruption, and he didn't know what it was. I went there and found a well developed case of varioloid. Now he was a very good man, and it was very easily overlooked. I am no friend of bovine virus. One reason is, probably, that in my early boyhood I was trained to use the humanized virus. In Germany there is a physician appointed in each county, and he has to vaccinate every child in the county. My father held that position, and during the five years that I was studying medicine I happened to be home in May and December, when the law requires the vaccination, and I vaccinated all the children of the county for five years. The law requires the making of four incisions in the arm. We used nothing but the clear lymph. We had, instead of ivory points, a point very similar, made of horn. We opened a pustule and took a drop of lymph, and then we had a wide-mouthed bottle, and on either side of the cork were bored holes, and we stuck the points in there, and that was the way we kept our virus. Our people lived in villages and were not scattered all over the country. I sent word, through the public crier, who goes through the streets and avenues and proclaims that the doctor is coming on that

day to vaccinate. A week after that I would go there and vaccinate four or five children, hunting as sound children as I could get. Having practiced medicine there we knew the people pretty well, and we always picked out as healthy subjects as possible and vaccinated four or five children. Nine days afterwards we would go there and vaccinate all. We gathered them in a large hall; sometimes I would have two hundred or two hundred and fifty children. Then I did not make any punctures. In vaccinating I made little cuts, and I use a very small lancet that is dull. Don't use a sharp one, use a dull knife. You don't want it to bleed at all. A l you want is just to scratch it. Then put your fresh lymph on it and let the children sit there until it is dry, and I guarantee that you won't miss one in a thousand. I don't believe in putting plaster over it. I have vaccinated children in Youngstown for forty years, and the only time I used bovine virus was when we probably had an epidemic of smallpox and I ran out of humanized virus. I take no other. I never had a case of erysipelas, and I never had a child break out in any other place than where I vaccinated.

Dr. Kahle—Mr. President, I just want to say in regard to pulverized virus, that I see no advantage in it over ivory points, and I see some disadvantages. It is seldom that a physician is called upon to vaccinate twenty or forty at one time, and in that case your virus is liable to spoil. It is liable to contamination, while with ivory points I have always had very good success, and have had but few failures, and those failures have generally been attributed to some other cause than the virus. I don't believe in using humanized virus. I believe there is great danger of contamination with erysipelas or syphilis, or some infectious disease.

Dr. Casper, of Niles—Mr. Chairman, I have vaccinated some eighty children this winter with ivory points, getting them at Washington City, and out of the eighty I think there are only seven that did not take. But as Dr. Buechner said, I have for forty years taken humanized virus, and I never saw any bad results from it. And in regard to smallpox, I can tell you something by experience. When I took the smallpox it began with a pain in my back. During May of that year I had attended a case of smallpox. I was sick all summer. I think the smallpox was lying in my system dormant all that summer, and on the 9th of January I took sick.

The Chair—Is there anything further on the subject of smallpox and vaccination? If not, gentlemen, we will give Dr. Sutton an opportunity to bring a matter before this meeting.

Dr. Sutton—Mr. Chairman and gentlemen, I have a matter here which comes under the head of sanitation, and will read you the resolution adopted by the section of ophthamology at the last meeting of the American Medical Association, and which will explain to you better than I can what I desire to accomplish. The following resolution was adopted;

"WHEREAS. There are in the United States several thousand persons who have become blind because of ophthalmia neonatorum; and

"Whereas, This unfortunate result is largely preventable, being mostly due to the neglect of nurses and midwives; therefore, be it

"Resolved, Etc." (Here was read a bill for the prevention of blindness.)

Now, the point is, I think, this convention ought to take steps towards bringing about this law. Several of the States have already a bill like this; and I have been requested by Dr. Clark, of Columbus, to bring this matter before this convention as an initiatory step towards getting it passed through the house.

Dr. Stanton—It appears to me that some action ought to be taken with reference to this matter. It is possible that those practicing in the country will not see the object of it so much as those practicing in larger places. In the country, where obstetrical practice is almost entirely in the hands of physicians, there is not much danger of communication of this disease; but in cities a great deal of the practice is done by midwives who are not properly instructed. I practice in a city where three-fourths of the obstetrical practice is done by women; and I believe that three-fourths of the cases of this disease, and a great deal of blindness, results from this cause. I think some action should be taken looking towards the enactment of laws that would govern this matter. Whether this is the best law that could be enacted, or whether it is just the kind of legislation we want, I do not know, but we certainly ought to take some steps looking towards legislation in this direction.

Dr. Buechner—I move that a committee be appointed to look into this matter, with power to act, if they deem it expedient; that they shall frame a bill and make some effort to have it passed by the legislature.

The motion being seconded, prevailed.

The Chair—I will appoint Dr. Buechner, Dr. Sutton and Dr. Brundage.

Dr. Collins—I move that an expression of this meeting be given on the subject of medical legislation in Ohio. In other words, I move you that our representatives and senators be asked to use their influence in having passed the bill that is now pending before the legislature.

The motion was seconded.

Dr. Moore—I would ask the question, which bill? I understand there is more than one bill.

Dr. Kahle—The bill that seems most likely to pass the senate is one that is being considered in committee now, and is the one that is known as the Mosgrove bill. I think if this convention expresses itself in favor of any legislation, that each member of this convention should be ready to go to his own member of the legislature and use his influence for the bill. In this way you can do more good than any other way.

Dr. Buechner—I think a resolution is not within the scope of this meeting, and I am opposed to it.

A Member—Mr. Chairman, I would like to hear the resolution read again. I don't remember the exact wording of it.

The Chair—Will you state the question again?

Dr. Collins—"That it is the sense of this meeting that we desire our representatives and senators to use their influence in the passage of a bill for the better regulation of the practice of medicine in the state of Ohio." I am not well enough acquainted with the matter to say which bill.

Dr. Reed—Mr. Chairman, I heartily concur with the gentleman as to the resolution. I do not think we ought to recommend the passage of either bill now or about to be before the senate. I don't see why it is not the province of this association to ask for something that will protect the public health, and certainly the bettering of the medical profession is in favor of the public health. At the same time I think it is wise for us to simply ask our legislature to pass a bill in the interest of the protection of the public health, and let them decide which is the proper one to pass.

The question then coming on the motion of Dr. Collins, the motion prevailed.

Dr. Long, of Bellaire—When we received our orders from the State Board of Health, requiring that every child should be vaccinated, there was no provision made for such children as could not be vaccinated at the time, and I suppose there are such children in every locality. Now I did not understand whether that was left to the local authorities to make rules regarding such children, or that the physicians should give them certificates until they might get into a proper condition to be vaccinated. Now what I would like to know is this, does the health board leave that to the discretion of the local authorities?

The Chair—Of course it is assumed that local health authorities will act in such a manner in the carying out of rules of health regulations as will have a tendency to better the health of the people and not make it worse. There are, undoubtedly, conditions in children where it would be improper to vaccinate them. If that child was sick at the time with some other disease, of course it would be an injudicious thing to vaccinate, and it should be postponed until such time as the child is in proper condition.

Dr. Buechner—I take one exception to the rule that children should not be vaccinated who are suffering from some other disease, and that is in the case of whooping cough. I have broken up the severity of the paroxysms by vaccination.

On motion, the convention adjourned.



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